Studies in The Linguistic Sciences

9, No. 1
ng 1979

PAPERS IN GENERAL LINGUISTICS

Department of Linguistics
University of Illinois

STUDIES IN THE LINGUISTIC SCIENCES

PUBLICATION OF THE DEPARTMENT OF LINGUISTICS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

AIM: *SLS* is intended as a forum for the presentation of the latest original research by the faculty and especially students of the Department of Linguistics, University of Illinois, Urbana-Champaign. Especially invited papers by scholars not associated with the University of Illinois will also be included.

SPECIAL ISSUES: Since its inception *SLS* has been devoting one issue each year to restricted, specialized topics. A complete list of such special issues is given on the back cover. The following special issues are under preparation: Fall 1979: *Relational Grammar and Semantics,* edited by Jerry L. Morgan; Fall 1980: *Papers on Diachronic Syntax,* edited by Hans H. Hock; Fall 1981: *Studies in Language Variation: Nonwestern Case Studies,* edited by Braj B. Kachru; Fall 1982: *South Asian Linguistics: Syntax and Semantics,* edited by Yamuna Kachru.

BOOKS FOR REVIEW: Review copies of books (in duplicate) may be sent to the Review Editors, Studies in the Linguistic Sciences, Department of Linguistics, University of Illinois, Urbana, Illinois, 61801.

SUBSCRIPTION: There will be two issues during the academic year. Requests for subscriptions should be addressed to *SLS* Subscriptions, Department of Linguistics, 4088 Foreign Languages Building, University of Illinois, Urbana, Illinois, 61801.

Price: $5.00 (per issue)

STUDIES IN THE LINGUISTIC SCIENCES

VOLUME 9, NUMBER 1
SPRING, 1979

DEPARTMENT OF LINGUISTICS, UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS 61801

TABLE OF CONTENTS

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

QUANTIFIER REPOSITIONING

Anthony Britti

Quantifier repositioning processes are examined in a number of languages. Every language has an unmarked sentence position (USP) for quantifiers with regard to the NPs which they bind. It is assumed that in USP a quantifier is in construction with its bound NP. USP is either pre-nominal or post-nominal in a given language.

A quantifier repositioning process moves a quantifier out of USP. There are two clear-cut types of quantifier repositioning. In the first, a quantifier is moved out of construction with its bound NP such that the quantifier commands the NP. In the second, a quantifier is moved such that it remains in construction with its bound NP. A third process, which may or may not be a quantifier repositioning process, yields an output with a quantifier and two coreferential NPs bound by it. These three processes are differently constrained hierarchically in different languages and may interact with each other in a particular language in what may be a principled way.

A Relational Grammar generalization about quantifier repositioning is shown to be both partly false and partly inadequate. The actual facts of natural language are more complex than this generalization can account for.*

In their "Notes on Relational Grammar", Postal and Perlmutter introduce the notion term and give a characterization of it by means of syntactic behavioral properties. We will be concerned with one of these:

1. Only terms can launch floating quantifiers (Perlmutter and Postal, 1974, p. 1).

This statement has often been accepted simply at face value; its veracity has thus far not been empirically examined. Herein we will take a close look at 1. It will be shown to be both partly inadequate as a generalization and also false as an exceptionless fact about language.

As it is stated, 1. is only about a process of quantifier floating. Whether there exist other rules which move nouns or quantifiers relative to one another has not been discussed extensively in the literature.[1)] This matter will be taken up in section II of this study. It will be demonstrated that there are several types of quantifier repositioning, and that these are subject to the same hierarchical constraints in some languages as are expressed in 1.

In its usual interpretation 1. is taken to mean that only, though not necessarily all, terms in a given language may launch quantifiers. This

will be shown to be false in section III below. For each sort of quantifier defined in section II, there is at least one exception. In section I, a few preliminary matters will be disposed of.

I
Preliminaries

A bi-level model of the relational grammar sort will be assumed.

We will be concerned with quantifiers at that point in a derivation where they are in construction with[2] a noun phrase. For the relation which holds between a quantifier and a noun phrase, we will employ terminology from the predicate calculus--binding. The question of the underlying status of quantifiers and how they come to be in construction with the NPs which they bind is not of concern here.[3]

Any discussion of quantifier repositioning entails that there exist in a sentence a position out of which a quantifier may be moved--an unmarked sentence position (USP). When in USP, we will assume that a quantifier is in construction with a NP which it binds. Granting this assumption, it is usually fairly easy to demonstrate USP in a language. There are, of course, basically only two possibilities for USP--pre-nominal and post-nominal. The task which then presents itself is to find which of these is USP when a quantifier is in construction with a NP which it binds.

In Literary Tamil, for example, a quantifier may occur either pre-nominally or post-nominally for subjects, direct objects and indirect objects:

2.a. yella: manitar-kal-um po:na:r-kal
all man- pl:-inclusive went- pl:

b. manitar-kal yella:-m po:na:r-kal (V → Ø/V___)

"All the men went."

3.a. na:n yella: manitar-kal-ay-um pa:rtte:n
I all man- pl:-obj.-incl. saw

b. na:n manitar-kal yella:-r-ay-um pa:rtte:n[4]

c. na:n manitar-kal-ay yella:-m pa:rtte:n

"I saw all the men."

4.a. na:n yella: manitar-kal-itam-um aday kututte:n
I all man -pl:-ind.obj.-incl. it gave

b. na:n manitar-kal yella:-r-itam-um aday kututte:n

c. na:n manitar-kal-itam yella:-m aday kututte:n

Three possibilities show up in these examples: yella: occurs prenominally, it occurs between the head noun on one side and the case and

inclusive morphemes on the other, or with the head noun and case morpheme on one side and the inclusive morpheme on the other. If yella: occurs to the right of the inclusive morpheme, ungrammaticality results. We may conclude, then, that the quantifier remains in construction with the NP which it binds. Which of these different possibilities represents USP? To answer this, we look at oblique NPs. With comitatives, instrumentives, locatives, and passive agents, a quantifier may appear only pre-nominally:

5.a. na:n yella: manitar-kal-utan-um po:ne:n
I all man- pl:-com.-incl. went

b. *na:n manitar-kal yella:-r-utan-um po:ne:n

c. *na:n manitar-kal-utan yella:-m po:ne:n

"I went with all the men."

6.a. mutan mantiri oppantatt-ay yella: pena-kal-ina:l-um
prime minister treaty-obj. all pen- pl:-instr.-incl.

kayappumitta:r
signed

b. *mutan mantiri oppanatt-ay pena-kal yella:-r-ina:l-um

kayappumitta:r

c. *mutan mantiri oppanatt-ay pena-kal-ina:l yella:-im

kayappumitta:r
"The prime minister signed the treaty with all the pens."

7.a. aval-kal anta sinima-v-ay yella: tiettar-kal-il-um
he- pl: that movie-Ø-obj. all theater-pl:-loc.-icl.
ka:ttugira:r-kal[5)]
show- pl:

b. *aval-kal anta sinima-v-ay tiettar-kal yella:vatr-il-um

ka:ttugirar-kal

c. *aval-kal anta sinima-v-ay tiettar-kal-il yella:-m

ka:ttugirar-kal

"They showed that movie in all the theaters."

8.a. avan yella: tirutar-kal-a:l-um kollappatta:n
he all thief- pl:-agt.-incl. was killed

b. *avan tirutar-kal yella:-r-a:l-um kollappatta:n

c. *avan tirutar-kal-a:l yella:-m kollappatta:n

"He was killed by all the thieves."

On the basis of these sentences, we may argue that a prenominal USP is the case in Tamil and that in subjects, direct objects, and indirect objects, quantifiers may be optionally postposted.[6] Similar arguments can usually be given for other languages. We now go on to a discussion of the types of quantifier repositioning.

II
The Forms of Quantifier Repositioning
Structural Definitions

The phrase "quantifier floating" has most usually been used to refer to a process which links 9.a., a surface structure which preserves USP in English, to 9.b.

9.a. all of those guys are Republicans

b. those guys are all Republicans

In 9.b. the quantifier is no longer in construction with the quantifier which it binds. Instead, the quantifier has a different structural relationship to its bound NP--that of command[7]. This process will be called Type I quantifier repositioning and defined as follows:

10. Type I quantifier repositioning moves a quantifier such that it commands the NP which it binds.

Quite different is Type II quantifier repositioning. The Tamil examples in 2.-4. are illustrative of this. As was said, the quantifier in Tamil must stay in construction with the NP to which it is bound as the following negative data show.

11. *manitar-kal-um yella: po:na:r-kal
man- pl:-incl. all went- pl:

12. *na:n manitar-kal-ay-um yella: pa:rtte:n
I man- pl:-obj.-incl. all saw

13. *na:n manitar-kal-itam- um yella: at-ay kututte:n
I man- pl:-ind.obj.-incl. all it-obj. gave

The inclusive morpheme, -um, must come last in a NP. Since yella: is on the other side of -um, it is interpretable as outside the NP, and so, 11-13. are ungrammatical. The definition of Type II is, then, 14.

14. Type II quantifier repositioning moves a quantifier such that it remains in construction with the NP which it binds.

A third process gives an output which is the intersection of the outputs of the other two processes. This is seen in Modern Palestinian Arabic.

15.a. ʕuft kull is-sayya:ra:t
I-saw all the-cars

b. ʕuft is-sayya:ra:t kull-hin
I-saw the-cars all-them

"I saw all the cars."

In 15.b. is-sayya:ra:t and -hin are coreferential. -hin is cliticized to kull--the ultimate case of two constructions being in construction with one another. Since is-sayya:ra:t may be moved out of continguity with kull-hin, as in 16., it seems obvious that is-sayya:ra:t is not in construction with kull-hin.

16. ʕuft is-sayya:ra:t mba:rih kull-hin
I-saw the cars yesterday all-them

"I saw the cars yesterday all of them."

This process may be defined in either of the following manners.

17.a. A quantifier may be moved so that it both commands and is in construction with copies of the NP which it binds.

b. A NP may be moved so that copies of the NP are both commanded by and in construction with a quantifier by which they are bound.

Both 17.a. and b. are postulated because it is not always clear whether it is the quantifier or the NP which moves. The output is the same in any case: two coreferential NPs are bound by the same quantifier. It may be, too, that both 17.a. and b. are possible in natural language.

If 17.b. should turn out to be the case (and not 17.a.), then, the process in question is not quantifier repositioning at all. For the sake of convenience, though, we will call the process (or processes) in question here Type III.

Type III exists in English where it appears to a somewhat marginal, "afterthought" construction. This does not seem to be so in other languages, however; in Arabic and Bahasa Malaysia-Indonesia the Type III process is more integrated in the grammatical system.

Tests--How to Determine What's What

What follows is a brief discussion of criteria which have already been alluded to for determining whether one has an instance of Type I or Type II quantifier repositioning. Type III will not be considered because it is easily identifiable and not likely to be confused with the other two varieties.

Since languages often have a prenominal position as USP[8)], the simplest class of tests involves how far back in a sentence a quantifier may move--when a constituent may occur between a quantifier and its source (=bound) NP, this is a clear-cut case of Type I (as in 9.b. above).

Or, if a language has certain morphemes in NP-final position (including postpositions or such things as the inclusive morpheme in Tamil), which must be analyzed as part of the NP, and a quantifier cannot move past these morphemes, then this is a clear-cut instance of Type II. This is exemplified by Tamil.

Otherwise, a third, different sort of test[9] is called for. If the application of a chopping rule allows a quantifier to be stranded, then this is a case of Type I, as in 20., below; if no quantifier stranding is permitted, on the other hand, then this is an example of Type II, as in 21., below.

20.a. I believe they all be chiefs

b. I believe them all to be chiefs

21.a. I was seen by them all

b. *by them I was seen all

c. by all of them I was seen[10]

We go now to some examples of hierarchical interactions in quantifier repositioning types when more than one type occurs in a language.

Hierarchical Interactions

The fact that there are language particular hierarchical conditions on the application of the three processes described above vis-a-vis one another is evidence for the existence of three separate processes universally.

I. English allows fairly free Type I repositioning from subject position, but only Type II from all other positions (as 21. shows). What is more, Type II in non-subjects is possible only for NPs with pronominal heads.[11]

22.a. all those prospects are exciting

b. those prospects are all exciting

23.a. I saw all of them

b. I saw them all

24.a. he gave food to all of them

b. he gave food to them all

25.a. he went with all of them

b. he went with them all

26.a. he was seen by all of them

b. he was seen by them all

II. In Japanese there is both Type I and Type II repositioning for topics, subjects and direct objects, only Type II for NPs lower on the hierarchy.

27.a. minna kodomo wa hon o moratta
all child top.book obj. received

b. kodomo minna wa hon o moratta

c. kodomo wa minna, hon o moratta[12)]
"All the children received a book."

28.a. kodomo wa, minna hon o moratta
child top. all book obj. received

b. kodomo wa hon minna o moratta

c. kodomo wa hon o minna moratta
"The children received all the books."

29.a. minna no kodomo ni
all of child ind. obj.

b. kodomo minna ni

c. *kodomo ni minna
"to all the children"

30.a. minna no kodomo to
all of child with

b. kodomo minna to

c. *kodomo to minna
"with all the children"

31.a. minna no kodomo ni
all of child by (passive agent)

b. kodomo minna ni

c. *kodomo ni minna
"by all the children"

III. Type II and Type III operate on subjects, direct objects, and indirect objects in Bahasa Malaysia-Indonesia; Type III only for other NPs except chomeurs (data are from Chung, 1976, extended where necessary).

32.a. semua anakanak ber- larian pergi
all children intrans.-run go

b. anakanak semua ber-larian pergi[13)]

c. anakanak semua-nya ber-larian pergi
all them

"All the children ran away."

33.a. saya beri-kan semua barangbarang saya kepada hasan
I give-ben. all things my to Hasan

b. saya beri-kan barangbarang saya semua kepada hasan

c. saya beri-kan barangbarang saya semua-nya kepada
all- them to
hasan
Hasan
"I gave all my things to Hasan."

34.a. saya men- awar- kan rokok kepada semua anakanak
I trans.-offer-ben. tobacco to all children

b. saya men-awar-kan rokok kepada anakanak semua

c. saya men-awar-kan rokok kepada anakanak semua-nya
all- them
"I gave tobacco to all of the children."

35.a. saya me- masukkan sajur ke dalam semua
I trans.-put vegetable to inside all

keranjangakeranjanga
baskets

b. *saya me-masukkan sajur ke dalam keranjangakeranjanga
semua

c. saya me-masukkan sajur ke dalam keranjangakeranjanga

semua-nya
all- them
"I put vegetables into all the baskets."

36.a. mereka pergi men- onton filem dengan semua
they go trans.-watch film with all

temanteman nya
friends their

b. ??mereka pergi men-onton filem dengan temanteman nya semua

c. mereka pergi men-onton filem dengan temanteman nya semua-nya
all- them
"They watch the film with all their friends."

37.a. dalam semua perjalananperjalanan dia men- anyakan
in all trips he trans.-ask

macan pertanyaan
sorts question

b. *dalam perjalananperjalanan semua dia men-anyakan macan pertanyaan

c. dalam perjalananperjalanan semua-nya men-anyakan macan
all- them
pertanyaan
"During all the trips he asked questions."

38.a. saya meng- irim-i hasan semua suratsurat
I trans.-send-ben. Hasan all letters

b. *saya meng-irim-i hasan suratsurat semua

c. *saya meng-irim-i hasan suratsurat semua-nya
all- them
"I sent Hasan all the letters."

38. shows that quantifiers cannot be repositioned relative to a NP when the NP is a chomeur (here, the output of a dative movement rule).

Theoretical Implications

The examples above from Tamil and Bahasa Indonesia-Malaysia show that Type II quantifier repositioning is subject to constraints which are similar to those usually attributed to Type I, assuming that Type I is what is usually called quantifier floating. If Type I is quantifier floating, then 1., above, does not adequately characterize the facts.

"Quantifier floating", however, could be taken merely as a rubric for both Type I and Type II repositioning. This is possible, but it is not probable that earlier writers had this in mind. The different sorts of quantifier repositioning simply were not known. Even so, this could not be maintained in view of the data from English and Japanese which show that in some cases Type II repositioning is not conditioned by terms. And in Bahasa Indonesia-Malaysia, Type II is constrained while Type III applies freely. This matter will be returned to below in section III.

Conclusion

Though the evidence is somewhat tenuous, it may be that there is an implicational hierarchy involved in quantifier interactions in natural language. Application of the three processes may be represented schematically as follows:

39. Type I $\geq$ Type II $\geq$ Type III

This is to be interpreted as meaning that, if both Type I and Type II occur in a language, Type I will apply only to NPs higher on the NP hierarchy while Type II will apply at all points on the NP hierarchy. If Type II and Type III exist in a language, Type II will apply to higher points on the NP hierarchy, but Type III will apply at all points on the NP hierarchy. The transitivity relation would also hold between the points in 39. Again, however, 39. is based on evidence from only three languages, English, Japanese, and Bahasa Malaysia-Indonesia.

In this section a general typology of quantifier repositioning process was laid out and defended. It was shown that the relational grammar assertion about terms and quantifiers does not say enough and, thus, is inadequate. Next we move to some absolute exceptions to the proposition stated in 1.

III
Absolute Exceptions

Above we saw that both Type I and Type II repositioning are constraine in various languages.[14] Now we will quote examples of unconstrained Type and II. Type II and III exceptions to 1. are perhaps not so controversial (one is left feeling that perhaps Postal and Perlmutter were correct after all), but contravening evidence with regard to Type I casts 1. into more serious doubt.

First, though, note that Arabic allows Type III repositioning from all NP positions. So, if Thai is an example of hierarchically conditioned Type III (see footnote 14)), then Arabic would constitute a contrasting case.

Turkish is an instance of exceptionality to constraints on Type II. At least for the quantifier all, Turkish has two morphemes: a pre- and postnominal bütün and a postnominal hepsi. These two may or may not co-occur:

40.a. bütün adam-lar burada
all man- pl. here

b. bütün adam-lar-ın hepsi burada[15]
all man- pl.-? all here

c. adam-lar-ın bütün hepsi burada

d. adam-lar-ın hepsi burada[16]
"All the men are here."

Examples b. and c. of 40. are related by a rule of Type II repositioning in subject position. The following sentences show that this repositioning is not hierarchically conditioned.

41.a. bütün adamlar hepsin-i gördüm
all men all- obj. I saw

b. adamlar bütün hepsin-i gördüm
"I saw all the men."

42.a. bütün adamlar hepsin-e kitap verdim
all men all- ind. obj. book I gave

b. adamlar bütün hepsin-e kitap verdim
"I gave a book to all the men."

43.a. bütün o evler hepsin-de insanlar yaşıyor
all that houses all- loc. people live

b. o evler bütün hepsin-de insanlar yaşıyor
"People live in all those houses."

44.a. bütün adamlar hepsi-yle gittim
all men all- com. I went

b. adamlar bütün hepsi-yle gittim
"I went with all the men."

45.a. bütün adamlar hepsi tarafından görüldü
all men all agentive he was seen

b. adamlar bütün hepsi tarafından görüldü
"He was seen by all the men."

Turkish, then, allows repositioning for any NP in a sentence.[17)]

Lastly, Korean constitutes an example of a language where Type I is not hierarchically constrained. Passive agents, however, do not condition quantifier repositioning.

46.a. motin ai- nin c^{h}ɛk-il patat'a
all child-top. book-obj. received

b. ai-nin c^{h}ɛk-il motu patat'a
"All the children received books."

46.b. is ambiguous; motu can bind either ai or c^{h}ɛk. This is because plural marking in nouns is optional in Korean, as it is in Japanese. Presumably context would disambiguate between the two interpretations. The two different forms of the quantifier are to be explained thus: motin is a prenominal form while motu is postnominal. Neither form can be broken down further synchronically.

Direct objects also condition Type I and Type II repositioning:

47.a. ki-nin motin c^{h}ɛk-il ɔce patat'a
he-top. all book-obj. yesterday received

b. ki-nin c^{h}ɛk motu-il ɔce patat'a

c. ki-nin c^{h}ɛk-il motu ɔce patat'a

d. ki-nin c^{h}ɛk-il ɔce motu patat'a
"He received all the books yesterday."

47.b. is a straightforeward case of Type II; 47.c. could be either Type I or Type II; 47.d. is unambiguously Type I.

For other sorts of NPs, Type II applies freely. Type I, on the other hand, is restricted in this way: whenever a direct object appears in a sentence, a Type I repositioned quantifier will be first interpreted as binding it (though a possible binding of a subject would have to be determined by context). If the predicate is intransitive (there thereby being no

direct object), various oblique NPs may condition Type I.[18]

So, motu moves out of a comitative NP in 48.:

48.a. na-nɨn motɨn ai- tɨl-kwa kɨkc'an-e kat'a
I- top. all child-pl.-com. theater-dir. went

b. na-nɨn ai-tɨl-kwa kɨkc'an-e motu kat'a[19]
"I went with all the children to the theater."

A locative NP conditions the movement in 49.:

49.a. na-nɨn kɨ motɨn cip-e caknyɔn- e sara-pwʌ̊t'a
I- top. dem. all house-loc. last year-in live experienced

b. na-nɨn kɨ cip-e caknyɔn-e motu sara-pwʌ̊t'a
"I lived in all those houses last year."

The repositioning from the instrumentive NP in 50. was judged okay by one informant but questionable by another:

50.a. na-nɨn motɨn c^{h}a-tɨl-lo kɨ kɨkc'aŋ-e kat'a
I- top. all car-pl.-instr. dem. theater-dir. went

b. ?na-nɨn c^{h}a-tɨl-lo kɨ kɨkc'aŋ-e motu kat'a
"I went to that theater in all the buses."

As was said before, Type I repositioning is not permitted from passive agents.[20]

The Korean examples of 48. and 49. provide a very clear (though quite restricted) instance of a counterexample to 1.

Conclusion

The foregoing discussion shows that 1. is untenable. For any given language with a process of quantifier repositioning, either that repositioning is conditioned by terms, or there are no hierarchical conditions on the process. In other words, the only generalization that could be made is quite vacuous.

Other generalizations from the data presented herein may be drawn. Type II is often unrestricted hierarchically as in English, Japanese, Korean, and Turkish. Quite as often it is constrained as in Tamil, Kannada, Bahasa Indonesia-Malaysia, and Ecuadorian Quechua. On the other hand, Type I is usually quite constrained hierarchically. This is true, as we have seen, in English and Japanese. It is also true in Tagalog, Hungarian, Russian, and other languages of Europe. The one language found where non-terms do allow Type I repositioning, Korean, has a language-particular restriction on the process. The reason for this undoubtedly lies in the fact that Type I moves a quantifier and its bound NP away from each other in such a way that the binding relation between the two could potentially not be processed properly or unambiguously. It is not, then, merely a matter of only terms launching floating quantifiers, but also of allowing

as few NPs as possible in a sentence to condition this kind of repositioning. For this reason, 1. turns out to be applicable in a large number of cases.

NOTES

*My appreciation goes to Jerry Morgan, Peter Cole, Bernard Comrie, and Rich Halpern for helpful comments and suggestions on this and earlier versions of this paper. I would also like to thank the following for their kind patience in acting as informants: my wife, Nirmala Govindarajulu, for Literary Tamil, Nicola Talhami for Modern Palestinian Arabic, Sachiko Hashimoto and Takeo Hagihara for Japanese, Chiang Kee Yeoh for Bahasa Malaysia-Indonesia, Soranee Wongbiasaj for Thai, long-forgotten Turkish informants, Sang Oak Lee and Eun Ae Y. Lee for Korean, S.N. Sridhar for Kannada, Carmen Chuquin for Ecuadorian Quechua, Gabie Hermon for Hungarian, and Olga Aronovski for Russian. Any mistakes are entirely my responsibility.

[1] Maling, 1976, and Shibatani, 1977, have discussed a distinction in quantifier repositioning processes which is partly similar to one which is made in this study. There findings were made independently of each other and of this study and in a language-particular context--English and Japanese respectively.

[2] The structural relation <u>in construction with</u> was defined by Klima, 1964, as follows--"a constituent is [in construction with] another constituent if the first is dominated by the first branching node that dominates the latter." (pp. 297-298).

[3] Also the question of whether or not quantifier repositioning is a relation changing rule will not be discussed.

[4] The appearance of the morpheme <u>r</u> in <u>yella:-r-ay-um</u> is not of importance here.

[5] The <u>v</u> in <u>sinima-v-ay</u> is a linking morpheme. <u>vatr</u> in yella:-<u>vatr-il-um</u> is an equivalent of <u>r</u> (see footnote 4)) used with inanimate head nouns.

[6] These data are complicated by the fact that in Tamil quantifiers are obligatorily postposed at every point on the NP hierarchy when there is a prenominal determiner or adjective. That we are dealing with obligatory quantifier postposing in this is born out by the following facts. Certain quantifiers may not be moved as <u>yella</u>: can. One of these is <u>sila</u>, "some".

i.a. sila manitar-kal po:na:r-kal
some man- pl: went- pl:

b. *manitar-kal sila po:na:r-kal
"some men went."

With non-terms, though, the same obligatory postposing shows up.

ii.a. na:n sila manitar-kal-utan po:ne:n
I some man- pl:-cóm. went

"I went with some men."

b. na:n nalla manitar-kal sila-r-utan po:ne:n
I good man- pl: some- cóm. went
"I went with some good men."

[7] Langacker, 1969, states the command relation thus--"a node A 'commands' another node B if (1) neither A nor B dominates the other; and (2) the S-node that most immediately dominates A also dominates B," (p. 167).

[8] All of these tests apply, however, mutatis mutandis to [NP Q] languages.

[9] Thanks go to Wayne Harbert for pointing this out.

[10] For some reason, not obvious to the present writer, the following possibility is not grammatical: *by them all, I was seen.

[11] The rule of Type I repositioning in English is apparently being extended diachronically, at least in my dialect. both may reposition with lexical direct objects:

i. I gave the men both a dollar.

That this is Type I can be seen from the following with stress on both:

ii. the men, I gave both a dollar.

Contrast:

iii. *the men, I gave all a dollar.

[12] Sentences which are potentially ambiguous are disambiguated by pause and intonation. Commas in these examples indicate pause.

[13] In Bahasa Indonesia-Malaysia we have Type II, not Type I; quantifiers cannot be stranded when rules move their bound NPs:

i. *?anakanak itu, semua berlian pergi
children these all run go

Topicalization has moved the subject to the left, and this sentence is ungrammatical in spite of its having the same word order as 32.b., which is grammatical.

In direct object position passivization cannot leave a bare quantifier:

ii. *barang saya saya beri semua kepada ali
thing my I give all to Ali

This sort of passive is examined in detail in Chung, 1976. Type III quantifier repositioning interacting with passivization from this position is fine:

iii. barang saya saya beri semua-nya kepada ali
thing my I give all-them to Ali
"I give all my things to Ali."

14) In Thai, quantifers binding subjects, direct objects and indirect objects may be optionally postposed to the end of a sentence. When the quantifier is repositioned, a nominal classifier appropriate for the bound head noun must be in construction with the quantifier:

i.a. khon thù:k khon yù: thî:nî:
people all class. be here

b. khon yù: thî:nî: thù:k khon
people be here all class.
"All the people are here."

Classifiers can occur with other items in an anaphoric situation:

ii.a. phu:ca:y khon nɯn
man class. one

b. khon nɯn
class. one="he"

b. can be anaphoric with a. in discourse. If the classifier in cases like i.b. is an anaphoric element, then the Thai repositioning phenomena are of Type III. Should this be the case, Thai presents an example of hierarchical constraints on Type III repositioning.

15) This writer does not understand certain of the morphological processes involved in these sentences. These undoubtedly are not of importance to the point being made.

16) In Turkish we have an instance of Type II and not Type I. In 39.b. presumably both bütün and hepsi are in construction with the head noun adamlar. When bütün is moved, it cannot move past hepsi and thus remains within the NP. The same fact is true in 40.-44.

17) For some mysterious reason, the instrumentive example was judged as questionable when the quantifier was moved:

i.a. bütün baltalar hepsi-yle odunlar-ı kestik
all axes all- instr. wood- obj. we cut

b. ??baltaların bütün hepsi-yle odunlar-ı kestik
"We cut the wood with all the axes."

18) NPs can be deleted rather freely in Korean when they are discourse anaphoric. In such sentences an underlying transitive verb may appear on the surface with its direct object deleted (analogous to English John is eating). But a stranded quantifier is still liable to be interpreted as binding the deleted direct object. In such sentences, in fact, this is the stronger reading. So, by intransitive predicate is meant underlying or lexical intransitive.

19) For reasons of lexical choice, the stronger interpretation is for motu to bind the comitative, not the directional NP.

20) This fact in Korean is paralleled by a similar fact in Bahasa Indonesia-Malaysia, where repositioning is not permitted for chomeurs (see example 38., above, and Chung, "An object creating rule in Bahasa Indonesia."

REFERENCES

CHUNG, Sandra. 1976. On the subject of two passives in Bahasa Indonesia. In C. Li, ed.: Subject and topic, pp. 57-98, New York: Academic Press.

_____. 1976. An object creating rule in Bahasa Indonesia. Linguistic Inquiry 7.41-88.

KLIMA, Edward S. 1964. Negation in English. In J. Fodor & J. Katz, eds.: The structure of language, pp. 246-323. Englewood Cliffs, NJ: Prentice-Hall.

LANGACKER, Ronald W. 1969. On pronominalization and the chain of command. In D. A. Reibel & S. A. Schane, eds.: Modern studies in English, pp. 160-186. Englewood Cliffs, NJ: Prentice-Hall.

MALING, Joan. 1976. Notes on quantifier postposing. Linguistic Inquiry 7.708-717.

PERLMUTTER, David, and Paul Postal. 1974. Notes on relational grammar. unpublished.

SHIBATABI, Masayoshi. 1977. Grammatical relations and surface cases. Language 53.789-809.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

REMARKS ON GERMAN NOMINALIZATION[1]

Susan Meredith Burt

The aim of this paper is to describe the form of sentence-nominalizations in Standard German, and to examine their implications for the phrase-structure rules of German in terms of the lexicalist and $\overline{X}$ theories of Chomsky (1970) and Jackendoff (1974). Part 1. shows that the distinction between derived and gerundive nominals which Chomsky and Jackendoff showed to be relevant for English is paralleled in German by the distinction between derived and infinitival nominals. Part 2. reviews some of the arguments that have been brought to bear on the question of base word order in German. Part 3. outlines the logically possible word orders of nominalizations and their implications for the syntax of German. Part 4. discusses which of these are actually grammatical to native speakers. The paper also discusses the implications of these results and shows that German, if it is indeed an SOV language, constitutes a counterexample to the $\overline{X}$ theory. Part 5. presents conclusions.

1. Derived and Infinitival Nominals

Chomsky and Jackendoff showed that derived and gerundive nominals in English differed in syntax, productivity, and in morphological and semantic regularity. German derived and infinitival nominals differ in similar ways.

German infinitival nominals are productive and regular in both morphology and meaning; the infinitive (with *das*) refers to the act of doing or being, as in the examples below:

(1)	Laufen	'running'
	Gehen	'walking, going'
	Sein	'being'
	Tun	'doing'
	Arretieren	'arresting'
	Applaudieren	'applauding'
	Verhaften	'arresting'
	Kaufen	'buying'
	Umziehen	'moving'

Derived nominals, on the other hand, are morphologically diverse, and the semantic relation to the verb is far from predictable, as the examples in (2) show:

(2)	der Lauf	'course, career, progress,...'
	der Gang	'movement,gait, walk, corridor,...'
	das Wesen	'creature, reality, essence,...'
	die Tat	'deed, action'
	der Arrest	'arrest'
	der Applaus	'applause'
	die Verhaftung	'arrest'

der Kauf	'purchase'
der Umzug	'move'

Derived nominals are not as productive as infinitival nominals; the verb ausmachen, with its variety of meanings('to extinguish, to recognize, to settle a matter, to harvest,...')lacks a corresponding derived nominal; *Ausmache or *Ausmachung seem not to exist.[2] Nouns which lack related verbs also exist;

(3)	das Mahl	'meal'
	der Eid	'oath'
	der Ernst	'seriousness'

The verb mahlen is not related to Mahl historically, nor, probably, in the minds of most speakers; the forms*eiden and *ernsten do not exist.

The morphological and semantic differences between derived and infinitival nominals in German are similar to those found for English derived and gerundive nominals. Consequently, it is likely that, like English derived nominals, German derived nominals are lexical entities inserted in the base, rather than transformationally derived from underlying S's or VP's. To derive them from S's or VP's would involve "an incredible proliferation of idosyncratic transformations," as Jackendoff (1974:4) claimed would be the case for English. Infinitival nominals, on the other hand, may perhaps derive from underlying VP's or S's. Further evidence for this is discussed below.

Infinitival nominals may take compound tenses; derived nominals may not (examples from Curme 1952:281):

(4) Die Angst des Versäumthabens
'the fear of having slipped up'

das Gefühl des Hinausgestossenseins
'the feeling of having been pushed out'

Eine solche Partei bietet keinen Schutz gegen das Überlaufenwerden des deutschen Reiches von der roten Flutwelle.
'Such a party offers no protection against the German Empire's being overrun by the red tidal wave.'

But derived nominals may not have tense:

(5) *Kaufhaben
*Umzugsein

In being able to have tense compounding, infinitival nominals are much more similar to S's than derived nominals are.

On the other hand, most derived nominals can pluralize, whereas infinitival nominals cannot:

(6) Läufe

Gänge
Taten
Arreste
Käufe
Umzüge
Wesen[3]
Verhaftungen

There seem not to be as many syntactic differences between German derived and infinitival nominals as between English derived and gerundive nominals. Only infinitival nominals can take compound tenses; only derived nominals can pluralize. Neither, however, can take adverbs, as gerundive nominals in English do:

(7) *Ihr Kaufen des Stoffes zu oft
'her buying of cloth too often'

*Ihr Kauf des Stoffes zu oft
?'her purchase of cloth too often'

*Georgs schon Gegangensein
'George's being gone already'

In summary, morphological and semantic differences certainly justify making a distinction between derived and infinitival nominals in German. Some syntactic differences also exist between these two classes, but in the sections below I shall discuss both kinds of nominalizations, since they share many syntactic characteristics.

2. Basic Word Order of German Sentences

Before it makes sense to discuss the syntax of German nominalizations in any further detail, it is necessary to make clear one of the crucial assumptions of this paper: that the basic word order in German is SOV (subject-object-verb). In fact, it is far from clear what the base word order in German really is; main clauses are SVO (8) and subordinate clauses are SOV (9):

(8) Ross hat das Fleisch aufgegessen. 'Ross ate the meat up.'
Eckard hat Besuch. 'Eckard has visitors.'
Mein Mann macht Lauten. 'My husband makes lutes.'

(9) Ross wird krank, weil er das Fleisch aufgegessen hat.
'Ross is getting sick because he ate the meat up.'

Eckard bleibt zu Hause, weil er Besuch hat.
'Eckard is staying home because he has visitors.'

Du weisst,dass mein Mann Lauten macht.
'You know that my husband makes lutes.'

These facts are well-known. Although detailed arguments in favor of SOV word order are beyond the scope of this paper, I will at least review some of the arguments that have been made.

Smith (1971) presents a great deal of evidence to show that SOV was the unmarked order in Germanic, inherited from Proto-Indo-European. Even though SOV now appears in a marked context, Smith claims that the historical evidence supports a synchronic analysis with SOV as underlying.

Barnes (1977) presents arguments from syntactic typology, pointing out other aspects of German syntax which seem to occur frequently in OV languages: adjective-noun order in NP's, postpositions, and a prenominal relative clause construction. It should be pointed out, however, that German also has constructions typically associated with VO languages: noun-genitive order (usually), prepositions, and a postnominal relative clause construction. It is not clear that arguments based on typology will work for German, since the language is typologically mixed.

Roeper argues for SOV base order in German on the basis of evidence from child language. In his 1969 paper he presents the results of a repetition test involving sentences with subordinate clauses, given to 41 four- and five-year-old German children. Roeper interprets his results--only two children substituted SVO order in the subordinate clauses-- as consistent with the hypothesis that German is underlyingly SOV. Roeper also notes that German children do not make an error which would be expected if German were SVO. English-speaking children have trouble with subject-auxiliary inversion in wh-questions, producing errors like:

(10) Why he plays football?

German children apparently do not make mistakes like this. Roeper explains that this is so because one transformation covers both statements and questions in German-- the rule that moves the finite verb from final position into second position.

Roeper gives evidence for SOV order from earlier stages of acquisition in his 1973 paper. At the two-word stage, OV utterances occur:

(11)	Bleistift holen	'pencil fetch'
	dies haben	'this have (i.e., I want this!)'

Even more revealing are the SOV utterances at the three-word stage:

(12)	Ulrike Roller fahren	'Ulrike (on) skates goes'
	Ich Schiff mache	'I ship make'
	Ich Pullover zeige	'I pullover show'

Roeper mentions, however, that at the three-word stage, children also produce a great many SVO utterances (the diary evidence in Scupin 1907 also shows this). According to Roeper, this is the case because the child learns SOV base order and the verb-second transformation at approximately the same time.

Park (1976) rejects Roeper's interpretation. Park gave a repetition test to three- to five-year-olds, in which he asked them to repeat both grammatical "surface" sentences and putative SOV deep structures. Most of the children rejected the latter, i.e., failed to repeat them.

Park is cautious about attributing knowledge of deep structure to children. He notes that it may not be reasonable to claim "that the linguistic processes of generative grammar are isomorphic with the psychological processes underlying ... acquisition...." (Park 1976:258). Nevertheless, it should be pointed out that German children seem at least to have some access to the SOV patterns of the language. English speaking children, by contrast, do not come up with utterances like those in (11) and (12) above, to my knowledge.

Some purely syntactic arguments have been made in favor of SOV base order in German. Bach(1962) took the order of dependent clauses as basic, as opposed to setting up a "fictional" (non-surface) order. He argued that with SOV order, rules like topicalization and the verb-second rule will be allowed greater generality than with other possible base orders. Putting the Aux or finite verb in final position will allow that element alone to be moved to second position; non-finite verbal elements will remain at the end, where they belong. Bierwisch (1963) follows Bach and adds another argument: that the verb is last in infinitive phrases," und sogar bei der rein lexikalischen Nennung von Verbalkonstructionen"; in other words, the citation form of a verb phrase is ein Buch lesen, not *lesen ein Buch.

Ross (1973) argues in favor of SOV base order on the basis of his independently motivated "Penthouse Principle", similar in effect to the structure-preserving constraint: "No syntactic processes apply only in subordinate clauses" (Ross 1973:397). If German were SVO in deep structure, a "downstairs only" rule would be needed to move the verb to final position; this is disallowed by the Penthouse Principle and the structure-preserving hypothesis. If German is SOV, however, the verb-second rule applies only in main clauses, a situation which the Penthouse Principle freely allows. Therefore, German is SOV.[4]

Emonds (1970) also argues for a base order of SOV for German, because this analysis will fit in with his structure-preserving hypothesis. In Emonds's theory, non-root transformations, those that apply in all clauses, must conform to the following formulation:

(13) $W_B(X)\ Y_B(\_\_)\ Z$ is rewritten as $W_B(\_\_)\ Y_B(X)\ Z$

(Emonds 1970:29). Those transformations which do not conform to this formulation are not structure-preserving and must be restricted to root clauses-- topmost clauses. Moving the verb in German, either from second position to the end of the clause or from the end of the clause to second position, will fail to conform to this formulation. Therefore, the rule must be restricted to the topmost clause; if this is the case, the verb-movement rule must be the one which moves main clause verbs to second position from clause-final position where they are generated by the phrase structure. Therefore, the base order in German is SOV.[5]

There are problems with some of the arguments for SOV base order; however, because German differs so clearly from SVO languages like English and French, for the sake of argument, let us adopt the assumption of SOV order in spite of the problems.

3. Possible Surface Orders of German Sentence Nominalizations

It is not clear a priori what the word order of a German sentence nominalization would be, whether it would correspond more to the word order in main clauses, or to that in subordinate clauses. Chomsky (1970:54) states:

> The strongest and most interesting conclusion that follows from the lexicalist hypothesis is that derived nominals should have the form of base sentences, whereas gerundive nominals may in general have the form of transforms.

In the next section I will examine whether the "strongest and most interestin case holds for German. In this section, I will look at the logically possible word orders for nominalizations, to see what their implications would be.

The simplest case would be for all sentence nominalizations to have SOV[6] word order, mirroring base word order. Notice that this would also constitute a further argument for underlying SOV order: this would be the order from which infinitival nominals were most easily derived. This would be the order paralleled by derived nominals (Chomsky claims that English derived nominals parallel the base word order of sentences). However, if German nominalizations were OVS in order, this would not be bad, either. A relatively simple rule of subject postposing would allow deriving infinitival nominals from an SOV base. If derived nominals are also OVS we will need the same subject-postposing rule, but it will still be possible to claim that derived nominals parallel clauses in underlying order-- SOV.

Suppose, on the other hand, that German sentence nominalizations have SVO order, that is, they correspond more closely to main clauses than to subordinate clauses. If this is the case, we have a dilemma: either 1) nominalizations are not base-generated in surface order, but their surface order is derived through transformation, or 2) nominalizations are base-generated, but their base structure does not parallel or mirror that of sentences, or 3) nominalizations are base-generated and do parallel the base structure of sentences, but that base structure is SVO order, in spite of the data in section 2. above.

Any of these conclusions will be troublesome for the Extended Standard Theory: if 1) is the case, German is a counterexample to the lexicalist hypothesis, which claims that derived nominals are base-generated in surface order except for optional preposing or postposing rules; if 2) is the case, German constitutes a counterexample to the claim of the $\bar{X}$ theory that the structure of nominalizations parallels that of sentences; if 3) is the case, German is a counterexample to the penthouse Principle and structure-preserving constraint, as discussed in section 2. above.

The same arguments will hold if German sentence nominalizations are VOS in order; they will then most likely derive from a basic SVO structure by a rule of subject-preposing; they will present the same problems as SVO nominalizations.

If sentence nominalizations are VSO, by any chance, we will have a standoff. A rule of verb-preposing could derive VSO nominalizations from an underlying order of either SOV or SVO.

On the basis of English nominalizations, Chomsky postulated a basic parallelism between the structure of the complements of the major syntactic categories and the structure of the sentence-- the $\overline{X}$ theory. In the next section I will investigate whether examining the structure of German nominalizations leads to the same conclusions.

4. German Sentence Nominalizations

In this section I will discuss which of the possible orders outlined in section 3. above actually are grammatical in German sentence nominalizations. It should be pointed out that this question is not as simple as it sounds, because, in many situations where English speakers could use nominalizations, German speakers find it more natural to use some other syntactic device. For example, we might say George's leaving early bothered me, whereas a German speaker would use, Es hat mich geärgert, dass Georg früh gegangen ist. The distinction between what one could say and what one would say often seems artificial to native speakers. The point is that the sentence nominalizations are already stylistically marginal, and this marginality can affect speakers' judgements.

The following show that SVO order is grammatical and SOV order is not in sentence nominalizations, both infinitival and derived:

(14)	SVO	SOV
	Ihr Kaufen des Stoffes 'her buying cloth'	*Ihr des Stoffes Kaufen
	Des Mädchens Kaufen des Stoffes 'the girl's buying cloth'	*Des Mädchens des Stoffes Kaufen
	Ihr Kauf des Stoffes 'her purchase of cloth'	*Ihr des Stoffes Kauf
	Des Mädchens Kauf des Stoffes 'the girl's purchase of cloth'	*Des Mädchens des Stoffes Kauf

Nominalizations of verbs with prepositional phrase complements seem also to be better in SVO order, though speakers judgements were more varied here.[8]

(15)	Ihr Lachen über Witze 'her laughing about jokes'	?Ihr über Witze Lachen
	Renates Lachen über Witze 'Renate's laughing about jokes'	?Renates über Witze Lachen
	Ihr Gelächter über Witze 'her laughter about jokes'	*Ihr über Witze Gelächter
	Renates Gelächter über Witze 'Renate's laughter about jokes'	*Renates über Witze Gelächter

If subject-postposing takes place, not much good results. But the OVS

nominalizations are considered worse than the VOS nominalizations; the latter may be ambiguous; the former are simply ungrammatical:

(16)

VOS	OVS
?Das Kaufen des Stoffes von dem Mädchen 'the buying of cloth by/from the girl'	*Des Stoffes Kaufen von dem Mädchen
?Der Kauf des Stoffes von dem Mädchen 'the purchase of cloth by/from the girl'	*Des Stoffes Kauf von dem Mädchen

The difference in badness here may be an indication that, of the putative sources for these nominalizations, the SVO is preferable to the SOV.

Finally, verb-preposing, the standoff case, results in VSO order, which is ungrammatical for transitives, while merely unnatural for intransitives (remember that O can refer to "other stuff" besides objects here, e.g., prepositional phrases):

(17) *Das Kaufen von Renate des Stoffes
'the buying by Renate of cloth'

*Der Kauf von Renate des Stoffes
'the purchase by Renate of cloth'

Das Lachen von Renate über Witze
'the laughing by Renate about jokes'

Das Gelächter von den Mädchen über Witze
'the laughter of the girls about jokes'

These data show that the preferred order for sentence-nominalizations is SVO, a result which presents problems for the Extended Standard Theory. However, the facts presented above are incomplete. As is well known, nominal compounding is very productive in German; the process extends to nominalizations of the type under consideration, and OV, not VO, is the order of these compounds:

(18)

Briefeschreiben	OV	'letter-writing'
Stoffkaufen	OV	'cloth-buying'
*Kaufenstoff	VO	'buying-cloth'
Ihr Stoffkaufen	SOV	'her cloth-buying'
Des Mädchens Stoffkaufen	SOV	'the girl's cloth-buying'
Ihr Stoffkauf	SOV	'her cloth-purchase'
Des Mädchens Stoffkauf	SOV	'the girl's cloth-purchase'
Kristins Briefeschreiben	SOV	'Kristin's letter-writing'
Der Stoffkauf des Mädchens	OVS	'the cloth-purchase of the girl'
Das Stoffkaufen der Frau	OVS	'the cloth-buying of the woman'
Das Briefeschreiben von Anne	OVS	'the letter-writing of Anne'

These examples show that when compounding is allowed, sentence nominalizations

may indeed be SOV in order, and may be OVS as well, if optional subject-postposing applies. This seems to contradict the results in favor of SVO order above.[9]

However, I think it can be argued that the compounding strategy is a secondary strategy in the formation of nominalizations, less productive than the non-compounding strategy. For example, compounding with infinitival nominalizations of intransitives is considered stiff and unlikely;[10] compounding with derived nominalizations of intransitives is impossible:

(19) ?Das Über-Witze-Lachen 'the about-jokes-laughing'
?Mein Nach-Kalifornien-Umziehen 'my to-California-moving'
*Das Über-Witze-Gelächter 'the about-jokes-laughter'
*Mein Nach-Kalifornien-Umzug 'my to-California-move'

The productivity of compounding may be further limited. Nominalizations of sentences with pronominal objects or with proper names as objects are not grammatical if formed with the compounding strategy.

(20) Non-compounding	Compounding
Sein Dank an mich 'his thanks to me	*Sein Mirdank *Sein Michdank
Die Verhaftung von Jürgen durch die Polizei 'the arrest of Jürgen by the police'	*Die Jürgenverhaftung durch die Polizei
Das Verhaften von Jürgen 'the arresting of Jürgen'	*Das Jürgenverhaften
Ihre Verhaftung von Jürgen 'their arrest of Jürgen'	*Ihre Jürgenverhaftung
Ihr Verhaften von Jürgen 'their arresting of Jürgen'	*Ihr Jürgenverhaften
'their arrest of him' 'their arresting him'	*Ihre Ihnverhaftung *Ihr Ihnverhaften
Kristins Schreiben der Briefe an mich 'Kristin's writing (letters) to me'	*Kristins Michbriefeschreiben *Kristins Mirbriefeschreiben *Kristins Michschreiben *Kristins Mirschreiben
Mein Schreiben der Briefe an Kristin 'my writing letters to Kristin'	*Mein Kristinbriefeschreiben *Mein Kristinschreiben

Finally, in nominalizations with tense-compounding, the object-compounding strategy is less acceptable than the non-compounding strategy.

(21) ?Rosses Aufgegesseshaben des Fleisches
*Rosses Fleischaufgegessenhaben
'Ross's having eaten the meat up'

? Ihr Gekaufthaben des Stoffes
* Ihr Stoffgekaufthaben
'her having bought the cloth'

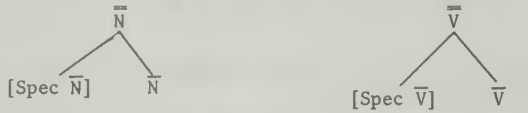
I perhaps have not found all the relevant data, but the data above seem to show that the compounding strategy, which allows OV order in sentence nominalizations, is a secondary strategy in nominalization, far less productive than the non-compounding strategy, which allows VO order. For the major strategy in sentence nominalization, SVO is the correct order.

The existence of two nominalization strategies in German is not surprising when we consider that German has two relativization strategies and two major sentence orders. But I have tried to show that the major nominalization strategy, the non-compounding strategy, produces SVO order. We are thus faced with the dilemma outlined in section 3. above. If we wish to maintain the claim of parallel structure in S's and nominalizations, it will be necessary to claim that nominalizations are not base-generated in surface order, but derived at least partially through transformations. German will constitute a counterexample to lexicalist theory under this approach.[11] If, on the other hand, nominalizations are base-generated in their surface order, either that order is different from the base order of sentences, and German is a counterexample to the claims of the $\overline{X}$ theory, or, if we wish to keep the $\overline{X}$ theory, German is a counterexample to the Penthouse Principle and the structure-preserving hypothesis. I am not sure how the Extended Standard Theory is to get out of this dilemma.

One possibility may be to abandon the "strongest and most interesting" claim of the lexicalist theory-- that derived nominals should have the structure of base sentences-- in favor of a weaker version of the $\overline{X}$ theory. This weaker version is the claim that major syntactic categories (nouns, verbs, adjectives) show parallel structures in their complements, but sentences are excluded from consideration. Hornstein (1975) argues for the exclusion of S from the $\overline{X}$ convention, on the grounds that this will allow formulation of simpler rules of negative-placement and $\overline{X}$-deletion. If the strong claim of the $\overline{X}$ is not tenable for German, as I believe is the case, perhaps we can still maintain the weaker version of the theory.

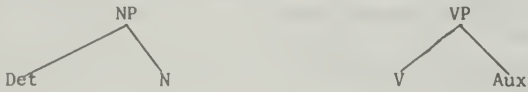
The $\overline{X}$ convention claims that a structure of [Specifier $\overline{X}$]-$\overline{X}$ will be the expansion of X, X being the major syntactic categories, N,V, and A. [Spec $\overline{X}$] will be the determiner for N, the Aux for V, and degree phrases for A. Thus a parallelism in the base like that shown in (22) is proposed:

(22)



Notice,however, that if German is SOV underlyingly, that it does not display the parallelism shown in (22). Rather, it will have expansions like those shown in (23).

(23)



Recall Bach's argument for putting the Aux in final position (see 2. above). Noun phrases in German have the form [Spec $\bar{X}$]-$\bar{X}$, but verb phrases have the form $\bar{X}$-[Spec $\bar{X}$]. Thus, even the weakened form of the $\bar{X}$ theory is faced with a counterexample in German.

The Extended Standard Theory may be driven to a modification of the lexicalist hypothesis, whereby sentence nominalizations are generated in SOV order, and the verb-second rule that applies in main clauses also applies in nominalizations, and is obligatory--unless the nominalization is one that allows the object to be compounded (like Stoffkauf), in which case the verb-second rule is inapplicable.[12] Under this analysis, the verb-second rule will have to be exceedingly complicated, however, because it will have to be sensitive not only to different nominalizations where its obligatoriness will differ, but also to the difference between infinitival nominalizations, where the rule does apply, and infinitive phrases, where the rule does not apply:

(24) Es macht Spass über Witze zu lachen.
*Es macht Spass zu lachen über Witze.
'It is fun to laugh at jokes.'

Even if it turns out to be possible to formulate a verb-second rule with such restrictions, it seems to me that a theory which is driven to do so is a theory which should perhaps be reexamined.

One move which could enable us to maintain the $\bar{X}$ theory would be to claim that German is SVO in base order, in spite of the arguments reviewed in section 2. The SVO order of German sentence nominals provide another kind of evidence for thinking that this might be the case. In Burt (1978) the following facts were noted: in Turkish and Japanese, strict SOV languages, the verbal noun must always follow its arguments in a sentence nominalization. In Classical Arabic and Scottish Gaelic, which are VSO languages, the verbal noun must precede its arguments within the sentence nominal. These facts were shown to be true regardless of the case marking of the arguments, and regardless of the optional reordering of the arguments of the verbal noun. The following tentative universal was proposed:

(25) Languages that are verb-initial will have sentence nominals with the verbal noun preceding its arguments.
Languages that are verb-final will have sentence nominals with the verbal noun following its arguments.

If this proposed universal withstands testing in more languages, the data from sentence nominals in German, which are SVO under the productive strategy, will constitute another typological argument against considering German SOV.

There are other consequences for considering German SVO, however. The first is that we will need a rule which moves non-finite parts of the verb phrase to the end of the main clauses, as in the following sentences:

(26) Jürgen hat schon gegessen. 'Jürgen ate already.'
Jürgen will bald essen. 'Jürgen wants to eat soon.'
Jürgen hat essen wollen. 'Jürgen wanted to eat.'

The examples could be multiplied.

Besides this non-finite verb movement rule for main clauses, we would need a verb-to-the-end movement for subordinate clauses (see (9) above). This rule will not be structure preserving, but it will apply only in non-root clauses; it will thus constitute a strong counterexample to Emonds's structure-preserving hypothesis. In any case, reanalyzing German as SVO will not be problem-free.

In this section, I have discussed two nominalization strategies in German; the major strategy is SVO, and the minor strategy (which may be lexical rather than transformational) is SOV. If German is SOV in deep structure, sentence nominalizations do not parallel base sentences in base order; thus, German constitutes a counterexample to the $\overline{X}$ theory. If German is considered SVO in deep structure, we can maintain the $\overline{X}$ theory, but the structure-preserving hypothesis is faced with a counterexample.

5. Conclusions

In "Remarks on Nominalization" Chomsky claims a structural parallelism between nominalizations and base sentences; with gerundive nominals, this is because they are transformationally derived from sentences; for derived nominals, this is because the base structure for the NP parallels that of the S in many respects. I have tried to show that a similar parallelism does not hold for German nominalizations formed by the major nominalization strategy, if German is SOV in deep structure. Nominalizations formed by the major (non-compounding) strategy are SVO, more parallel to the word order of main clauses than to that of deep structure or subordinate clauses. I have also shown that German presents a counterexample to the $\overline{X}$ claim of a parallelism between noun phrases and verb phrases: the former are [Spec $\overline{X}$]-$\overline{X}$ in $\overline{X}$ terms, while the latter are $\overline{X}$-[Spec $\overline{X}$].

If the EST wants to keep both SOV word order and the $\overline{X}$ theory, it will be driven to an analysis which extends the verb-second rule to nominalizations; this involves complication of a major rule of the language.

The alternatives to modifying the lexicalist hypothesis are equally unattractive: either German is a counterexample to the $\overline{X}$ theory or it is a counterexample to the structure-preserving hypothesis. I am not sure how to resolve this dilemma.

In this short study I have not touched on numerous syntactic details: the ways in which presence or absence of the article or the choice of preposition can affect the grammaticality of nominalizations.[13] I have also left untouched semantic and stylistic questions regarding nominalizations. These questions alone show that nominalizations need further study. It may be that a more complete examination of German nominalization will also

lead to a solution of the problem this paper poses.

NOTES

[1]I wish to thank Ruth Lorbe, Hannelore French, and Hans Hock for making their time and intuitions available to me. This paper has also benefitted from suggestions by Jerry Morgan, Ray Jackendoff, Alice Davison, and Robert Kantor.

[2]Esau (1973) shows that whether or not a verb has a derived nominal may be at least partially predictable.

[3]Wesen takes a Ø plural, and only with certain interpretations.

[4]Notice, however, that German is still a counterexample to the Penthouse Principle, whether its deep structure is SVO or SOV. The subordinate clause corresponding to (i) is not (ii) as one would expect, but (iii).

(i) Herr Meyer hat nach Hause gehen müssen.
'Mr. Meyer had to go home.'

(ii) *Herr Meyer ist nicht hier, weil er nach Hause gehen müssen hat.
'Mr. Meyer is not here, because he had to go home.'

(iii) Herr Meyer ist nicht hier, weil er nach Hause hat gehen müssen.
'Mr. Meyer is not here, because he had to go home.'

The construction used in (iii) is used for subordinate clauses with the "double infinitive" construction used with modals. It seems to constitute an exception to the Penthouse Principle in any case.

[5]Notice that Emonds's theory does not suffer from the problems of the Penthouse Principle. The double infinitive construction in note 4 is not a counterexample to Emonds, since it fits into his class of minor movement rule, "a transformation which moves a specified constituent B over a single adjacent constituent C," (Emonds 1970:158).

Still, given Emonds's theory, any verb-movement rule must be either a minor movement rule or a root transformation, since phrase-structure rules will generate only one V-node within a clause, under most theories.

[6]S stands for the subject of the sentence the nominalization is related to; V is, of course, the nominalized form of the verb; O is the object or other complement (e.g., prepositional phrase); the distinction will be made where necessary.

[7]Examples beginning Des Mädchens were considered stiff, but grammatical.

[8]One speaker preferred Ihr über Witze Lachen to Ihr Lachen über Witze, but pointed out that other syntactic factors, such as presence or absence of modifiers for Witze could affect his preference.

[9]Jerry Morgan and Ray Jackendoff (personal communication) have both pointed out that this compounding process may be lexical rather than transformational.

[10]See note 8.

[11]There are other reasons, too, why this would be a bad move. Esau (1973) gives arguments against deriving even infinitival nominals from S's. He claims that they are base-generated as well.

[12]Unless, as suggested by Morgan and Jackendoff, nominal compounding is a lexical process. In this case, the verb-second rule would be only a little more complicated.

[13]Esau (1973) goes into some of this in detail.

REFERENCES

BACH, E. 1962. The order of elements in a transformational grammar of German Language 38.263-269.

BARNES, M. 1977. German word order and word order typology. Paper read at Modern Language Association, Chicago.

BURT, S. 1978. Word order typology and sentence nominalization. Manuscript. University of Illinois.

BIERWISCH, M. 1963. Grammatik des deutschen verbs. Studia Grammatica II. Akademie-Verlag, Berlin.

CHOMSKY, Noam. 1970. Remarks on nominalization. In Studies on Semantics in in Generative Grammar. Mouton, The Hague.

CURME, G. 1952. A grammar of the German language. Frederick Ungar, New York.

EDMONDS, J.E. 1970. Root and structure-preserving transformations. Indiana University Linguistics Club.

ESAU, H. 1973. Nominalization and complementation in modern German. North Holland, Amsterdam.

HORNSTEIN, N. 1975. S and the $\bar{X}$ convention. Montreal working papers in linguistics Vol. 4.35-71.

JACKENDOFF, R. 1974. Introduction to the $\bar{X}$ convention. Indiana University Linguistics Club.

PARK, T-Z. 1976. Word order in German language development. Word 27.247-260.

ROEPER, T. 1969. Theoretical implications of word order, topicalization, and inflections in German language acquisition. In Ferguson and Slobin, eds.: Readings in child language development. Holt Rinehart and Winston, New York. pp. 541-554.

ROEPER, T. 1973. Connecting children's language and linguistic theory. In T. Moore, ed.: Cognitive development and the acquisition of language. Academic Press, New York. pp. 187-196.

ROSS, J.R. 1973. The Penthouse Principle and the order of constituents. In You take the high node and I'll take the low node, Chicago Linguistic Society. pp. 397-422.

SCUPIN, E. and G. Scupin. 1907. Bubi--im ersten bis dritten Lebensjahre. Leipzig.

SMITH, J.R. 1971. Word order in the older German dialects. Dissertation, University of Illinois.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

IKOROVERE MAKUA TONOLOGY (PART 1)*

Chin-Chuan Cheng

and

Charles W. Kisseberth

The tonal structure of the verb in the Ikorovere dialect of Makua (a Bantu language spoken in southern Tanzania and in Mozambique) is examined in some detail. Since the tonal facts of this language have not previously been described, a goodly portion of the paper is devoted to a presentation of data; these data are characterized by a rather complex tonal pattern, and an analysis is developed that will account for the intricate array of facts by means of a small set of very general rules. Special care is taken to show how rules that are entirely general and exceptionless become obscured on the phonetic surface due to the application of other rules, both tonal and segmental in nature. The complexity of the Ikorovere tone system is all the more striking due to the fact that verb stems do not exhibit any lexical tone contrasts. The tonal shape of a given verb stem is entirely a function of its length and of the particular morphological environment in which it occurs; no lexical specifications are required in order to account for the tonal behavior of verb stems.

1. INTRODUCTION

The present paper represents the first attempt (to our knowledge) to describe the tonal pattern of the Makua language. We deal here with the Ikorovere dialect, spoken in Tunduru district in southern Tanzania.[1] The data on which this paper is mainly based were provided by S. A. C. Waane during a period of some three years while he was completing a Ph. D. program at the University of Illinois in the Department of Anthropology.[2]

We have two principal aims here. First, we wish to provide a fairly extensive body of information about the tonal structure of the Ikorovere verb. Since no information about tone in any Makua dialect is currently available, we hope that the data presented will be of some interest to the student of Bantu languages in general and to students of eastern Bantu languages in particular. In the interest of achieving this aim, we have incorporated numerous examples of each phenomenon discussed.

Our second aim is to provide a thorough analysis of the tonal structure of Ikorovere verbs, where each aspect of the analysis is as fully justified as the data and space limitations permit.

The tonal pattern of Ikorovere is quite complex, but extremely regular (i.e. there is no necessity for marking lexical items as being exceptional in their tonal behavior). While the rules that we postulate in order to account for the intricate tonal alternations exhibited by the data are not 'transparent', since they are considerably obscured by their interactions among themselves and with segmental rules affecting vowel sequences, they are massively attested and their essential nature is generally clear as long as one eliminates the various factors that render the rules opaque. (Of course, some matters of detail concerning the rules remain to be fully determined.) The Ikorovere tone pattern seems to us to provide significant support for the view that rules of grammar do not necessarily represent 'true generalizations' about surface phonetic forms but rather represent true generalizations about certain pre-phonetic levels of representation, in some cases levels of representation that may be rather removed from the surface. (For instance, we claim that the tonal pattern of Ikorovere is fundamentally determined at a level of representation where as many as five vowels may occur in succession across morpheme boundaries, although at the phonetic level at most two vowels can occur in succession.) Whether these true generalizations about pre-phonetic levels of representations continue to be equally true of the surface is entirely a function of the nature of the other rules of the grammar. Any theory that would require rules to be true generalizations about surface forms rather than pre-phonetic representations must come to grips with the tone system of Ikorovere.[3]

Due to the complexity of the material, we have restricted our attention in the present paper to the verb. This limitation is not meant to suggest that the tonal structure of the verb is an entirely separate matter from the tonal structure of other word classes. This is definitely not the case. But to do anything resembling justice to the Ikorovere noun, for instance, will require another overlong paper. Furthermore, there is much about the tonology of the verb that we have regretfully omitted from the present study. We have attempted to restrict ourselves to some of the most essential aspects of the tonology of the Ikorovere verb, relegating less significant matters to a forthcoming general description of Ikorovere phonology and morphology.

2. THE SIMPLE INFINITIVE

We will enter into the complex tone pattern of Ikorovere through a detailed examination of the tonal shape of the infinitive verbal form. A set of rules to account for these tonal shapes will be suggested; in some cases, the full justification of these rules will not be immediately apparent from consideration of the infinitive alone. An effort will be made in later sections to show that the analysis provided for the infinitive will extend in a natural fashion to account for the tonal shapes of other verbal forms.

In this section we will restrict ourselves to infinitival forms consisting of the infinitive prefix u-, the verb stem (which may either be a root or a root plus one or more derivational suffixes), and the final vowel -a which obligatorily occurs at the end of every infinitival form (and also at the end of numerous other verbal forms as well). We call such structures 'simple infinitives'.

The first thing that strikes one about the tonal structure of the simple infinitive in Ikorovere is that tone is not contrastive; that is, all simple infinitives which have the same segmental make-up also have the same tonal shape. This is true regardless of the morphological structure of the verb stem; as far as tone is concerned, it makes no difference whether a stem is monomorphemic or polymorphemic, all that matters is the number of vowels that it contains (in Ikorovere verb stems only vowels are relevant for the determination of the tonal pattern).

We will begin the process of uncovering the tonal principles that determine the phonetic tonal shapes of infinitives by considering first of all the infinitive forms of verb stems having the shape $-CVC_1-a$ (for ease of presentation, the term 'verb stem' will henceforth be taken to include the obligatory final vowel -a). A number of examples are given in (1). It should be emphasized that all verb stems having the shape $-CVC_1-a$ exhibit exactly the same tone pattern.

(1)	u-pát^h-á...	u-pát^h-a%	'to get'
	u-t^{h}áw-á...	u-t^{h}áw-a%	'to run'
	u-kóh-á....	u-kóh-a%	'to ask'
	u-váh-á....	u-váh-a%	'to give'
	u-lím-á....	u-lím-a%	'to cultivate'
	u-vénd-á...	u-vénd-a%	'to beg'

Transcription notes: The acute sign over a vowel indicates a high tone, the absence of a mark indicates a low tone. The sign % after an Ikorovere word indicates that the pronunciation cited is correct just in case that word is pronounced in isolation or at the end of a phrase. The sign ... after an Ikorovere example indicates that the pronunciation cited is correct just in case the word is phrase-medial. No sign after an example indicates that the pronunciation is correct both phrase-medially and phrase-finally.

Examination of the data in (1) shows that in each case the prefix u- is low-toned. It is not the case that all prefixes in Ikorovere are low-toned, therefore we assume that the infinitive prefix must be represented at the underlying level with a low tone. The first vowel of the verb stem is high-toned in all of the examples in (1), while the second vowel of the

verb stem (which in these examples is the final vowel -a) bears a high tone when the word is medial in the phrase, but is pronounced with a low tone when the word is in phrase-final position. At this point any analysis of these facts would be premature, so let us proceed immediately to verb stems of the shape $-CVC_1VC_1-a$.

(2) u-lówól-a 'to carry, transport'

u-p^{h}átél-a 'to get for'

u-lókót^h-a 'to pick up'

u-rúšíy-a 'to be annoyed'

u-túmbél-a 'to limp'

Once again we see that the u- prefix is low-toned and that the first vowel of the verb stem is invariably high-toned. These facts are precisely the same as those observed in (1). The difference between the two sets of examples is that in (2) the second vowel of the verb stem is invariably high-toned, it does not alternate between high and low depending on whether the word is phrase-medial or phrase-final. Notice that the second stem vowel in (2) is not the final vowel of the word, whereas the second stem vowel in (1) was the final vowel. Before proceeding to an analysis of these data, we should point out that some of the examples in (2) are monomorphemic and some are polymorphemic. The verbs u-lówól-a, u-lókót^h-a, and u-túmbél-a cannot (as far as we know) be analyzed into smaller constituent parts. The verb u-p^{h}átél-a, however, clearly consists of the verb root -p^{h}at- 'get' and a suffix -el- which has several uses, one of which is to indicate a beneficiary. The verb u-rúšíy-a also has a polymorphemic stem, consisting of the verb root -ruš- 'annoy' plus the passive suffix -iy-.

We turn now to an analysis of the data in (1) and (2). Consider first of all the alternation exhibited by the final vowel in (1), which is high-toned in phrase-medial position and low-toned in phrase-final position. Suppose that we were to take the pre-pausal form as more basic; then we would require a rule to assign a high tone to the final vowel of the infinitive when the infinitive is in phrase-medial position. But examples such as those in (2) show that it is not true that the final vowel always gets a high tone assigned to it when phrase-medial; verb stems of the structure $-CVC_1VC_1-a$ regularly end in a low tone in all contexts. Furthermore, a rule that raises a low tone to high tone at the end of a word but just in phrase-medial position does not appear to constitute a natural tone rule. Suppose that instead we claimed that the phrase-medial form of the verbs in (1) represents a more basic (though not necessarily underlying) representation and that the pre-pausal forms are derived by rule. The rule would presumably be something along the lines of (3).

(3) PHRASE-FINAL LOWERING (PFL)

$$H \longrightarrow L \;/\; \_\_\_\_\_\;\%$$

This rule simply says that a high tone preceding the end of a phrase will become a low tone.[4] Such a rule is consistent with the data so far presented and, furthermore, represents an instance of an expected accentual phenomenon--lowering of pitch at the end of an utterance.

The rule of PHRASE-FINAL LOWERING (henceforth PFL) will be assumed to represent the most likely candidate to account for the alternations exhibited in (1) between phrase-medial and phrase-final forms. Given that the phrase-medial forms in (1) represent a deeper representation than the pre-pausal forms, we can now see that (1) and (2) both follow the same tone pattern: namely, the first and the second stem vowels are high-toned. In (2), of course, there is a third stem vowel--namely, the final vowel -a. It is low-toned in all contexts. This fact will require some discussion eventually, but at this point it is simply a fact to be noted.

Given that the verbs in (1) and (2) both exhibit a pattern whereby the first and second stem vowels bear a high tone, we might assume that there is simply a rule of Ikorovere that directly assigns a high tone to the first two vowels of a verb stem in the infinitive. We will, however, pursue a somewhat less direct course of action--a course of action that will, we believe, be supported by further facts about the infinitive as well as by a variety of facts drawn from other parts of the Ikorovere verbal system.

The analysis we propose assumes that the high tones in (1) and (2) are the consequences of two separate rules. One of the rules is a tone-assignment rule; it is a rule that is governed basically by morphological considerations. This rule says simply: place a high tone on the first vowel of the verb stem in the infinitive form of the verb (though, as we will see later, the rule will in fact operate in a diverse set of morphological constructions). We assume that verb stems in underlying structure are not specified for tone, but that a redundancy rule will assign all the vowels of the stem the property of being low-toned. We make this assumption since the vowels of the verb stem are always low-toned unless they are assigned a high tone by rule. (4) below gives a preliminary statement of the INFINITIVE TONE ASSIGNMENT (ITA) rule.

(4) INFINITIVE TONE ASSIGNMENT (ITA)

$$V \longrightarrow \begin{matrix} H \\ | \\ V \end{matrix} \; / \; \text{Verb Stem} \left[C_0 \_\_\_\_ \right] \quad \text{Condition: in infinitives.}$$

This rule simply says that the first vowel of the verb stem is assigned a high tone.

The second rule proposed is different from INFINITIVE TONE ASSIGNMENT (henceforth ITA) in that it is not restricted to particular morphological constructions, but rather applies generally throughout the language. This rule says that a high tone on one tone-bearing element (generally a vowel, though under some circumstances a pre-consonantal nasal) will double onto the immediately following tone-bearing element. This rule is not iterative, i.e. it does not reapply to its own output. Thus a HLL sequence becomes HHL, not *HHH. We call this rule **HIGH DOUBLING** (HD). Its approximate formulation appears in (5).

(5) HIGH DOUBLING (HD)

HL ⟶ HH

It should be obvious that the rule ITA must be applied prior to HIGH DOUBLING (henceforth HD), since it is the high tone assigned by the former rule that must get doubled by the latter rule. The rule PFL, which lowers a high tone at the end of phrase, will be applied after HD. This ordering is necessary since it is the high tone resulting from HD that gets lowered by PFL in the case of the examples in (1). Consequently, we have the following sorts of derivation.

(6)	u-pat^{h}-a...	u-pat^{h}-a%	u-lowol-a	
	u-pát^{h}-a...	u-pát^{h}-a%	u-lówol-a	ITA
	u-pát^{h}-á...	u-pát^{h}-á%	u-lówól-a	HD
	inapplicable	u-pát^{h}-a%	inapplicable	PFL

The observant reader will have perhaps noticed that there is another possible approach to the alternation exhibited by the final vowel in (1). Since it is a high tone resulting from HD that appears on the final vowel in phrase-medial position and fails to appear in phrase-final position, then we might account for these alternations not by a separate rule PFL but instead by constraining HD so that it will not double a high tone onto a phrase-final vowel. In other words, HD might be formulated as in (7).

(7) HD' HLX% ⟶ HHX% Condition: X must contain at least one tone.

Given the condition on HD', a representation such as u-pát^{h}-a% will not undergo the rule. There is a HL sequence in this word, but there is no tone separating the L from the phrase boundary. With this modification of HD, we would no longer require the rule PFL to account for the alternations in (1).

At this point we cannot choose between invoking PFL or modifying HD. Both approaches will achieve the correct results. Later in this paper we will return to a discussion of this issue, and will suggest that the approach utilizing PFL is to be preferred. Therefore, at this point we will simply assume the correctness of the approach combining HD and PFL. HD will be kept in its original form, changing a HL sequence to HH without regard to whether the L is medial or final in the phrase.

Having provided an analysis for the data in (1) and (2), let us turn to infinitive verbs containing stems of the shape -CVC$_1$VC$_1$VC$_1$-a.

(8)	u-lókót^{h}él-á...	u-lókót^{h}él-a%	'to pick up'
	u-rámúcél-á....	u-rámúcél-a%	'to greet'
	u-pápát^{h}úl-á...	u-pápát^{h}úl-a%	'to detach'
	u-kúkúmúš^{v}-á....	u-kúkúmúš^{v}-a%	'to startle'
	u-cúkúš^{v}úr-á....	u-cúkúš^{v}úr-a%	'to wash the face'

The alternation between phrase-medial and phrase-final forms in (8) can obviously be accounted for in terms of the proposed rule of PFL. Under such an analysis, the phrase-medial form with high tones on all four vowels of the verb stem would represent a more remote representation from which the phrase-final form would be derived through the application of PFL.

The more important problem, then, posed by the data in (8) is: how do we account for the high tones that appear on all four vowels of the verb stem? The rules of ITA and HD will account for the high tones on the first two vowels of the verb stem, but as presently formulated our rules will not account for the high tones on the third and the fourth vowels of the stem. Before attempting to explain these two additional high tones, we need to look at even longer verb stems than those in (8). (9a) illustrates verb stems of the shape -CVC$_1$VC$_1$VC$_1$VC$_1$-a, while (9b) illustrates stems containing one additional vowel and (9c) illustrates stems containing two additional vowels.

(9)	a.	u-lókótáníh-a	'to pick up pl.'
		u-kwákwáth^{h}úwán-a	'to collide'
		u-tétémélél-a	'to tremble at'
		u-th^{h}íkílániíh-a	'to partition'
	b.	u-lókótáníhac-a	'to pick up pl.'
		u-kákámálíher-a	'to use s.t. to strengthen s.t.'
	c.	u-kákámálíherac-a	'to use s.t. to strengthen s.t. pl.'
		u-lókótáníherac-a	'to pick up pl. for/with'

In all of the above cases we find that in addition to a high tone on the first and second vowels of the stem, there are also high tones on the third and fourth vowels, but no high tones on any other vowels. It is clear, then, that we again have a pair of high tones to account for. We propose to explain this pair of high tones in a fashion parallel to our explanation for the pair of high tones on the first and second vowels. We will extend the rule ITA so that it assigns a high tone to both the

first and the third vowel of the verb stem.

(10) ITA'

$$V \longrightarrow \overset{H}{\underset{V}{\downarrow}} \; / \; \text{Verb Stem} \; \left[\begin{array}{l} C_0 \_\_\_\_ \\ C_0 \; VC_0VC_0 \_\_\_\_ \end{array} \right]$$

Given this reformulation of ITA, plus the application of HD, the correct forms will be derived. Sample derivations are shown in (11).

(11)	u-lokot^{h}el-a%	u-lokotaníh-a	u-lokotaníherac-a	
	u-lókot^{h}él-a%	u-lókotáníh-a	u-lókotáníherac-a	ITA'
	u-lókót^{h}él-á%	u-lókótáníh-a	u-lókótáníherac-a	HD
	u-lókót^{h}él-a%	inapplicable	inapplicable	PFL

Although ITA', in combination with HD and PFL, will assign the data in (8) and (9) the correct surface tone pattern, a difficulty does arise when we reconsider the data in (2). As formulated, ITA' will not correctly predict the tonal shapes of these items. ITA' yields the following incorrect derivation.

(12)	u-lowol-a...	
	u-lówol-á...	ITA'
	*u-lówól-á...	HD
	inapplicable	PFL

Infinitive forms like u-lówól-a are never pronounced with a high tone on the final vowel, but ITA' predicts that there should be a high tone on this vowel (in phrase-medial position at least; PFL would **be expected** to lower a final high tone at the end of the phrase). Two approaches to this problem suggest themselves. The first approach is that we might constrain ITA' so that it will assign a high tone only to vowels that are not **word-final**. Such a constraint on ITA' would prevent the rule from assigning a high tone to the third vowel of the stem in u-lówól-a, since that vowel is word-final, but would allow a high tone to be assigned to the third stem vowel in u-rámúcél-á..., since that vowel is not word-final. An alternative approach would be to allow ITA' to assign a high tone to the word-final vowels in examples like those in (2), but to hypothesize an additional rule that will lower a high tone at the end of a word. Of course, doubled high tones do not lower at the end of a word (unless they are also at the end of a phrase); it would only be original high tones (i.e. those existing prior to HD) that would lower in word-final position. We shall refer to original high tones as primary high tones to distinguish them from doubled high tones. In order to restrict the suggested rule of WORD FINAL LOWERING (henceforth WFL) to just primary high tones, the rule would have to be applied before HD. The derivation of u-lówól-a under this

analysis would be as in (13).

(13) u-lowol-a

u-lówol-á ITA'

u-lówol-a WFL

u-lówól-a HD

The rule of WORD FINAL LOWERING would be formulated as in (14).

(14) H ⟶ L / _____#

We will not at this point attempt to resolve the question of which of the above alternatives represents the best analysis of the data. Later, however, we will give some motivation for assuming that it is necessary to allow ITA' to assign high tones to the word-final vowel. Therefore, for the time being, we will simply assume that ITA' is to be kept in its original form and that a rule of WFL will account for the final low tone in the examples in (2).

To summarize, then, our proposed analysis of simple infinitives in Ikorovere includes the following rules, listed in the order in which we have shown they must apply.

(15) ITA'
WFL
HD
PFL

At this point in our exposition of the tonal shapes of infinitives in Ikorovere, we wish to shift our attention to an issue that is extremely important to the over-all analysis of Ikorovere tone. The issue is the proper representation of long vowels. Ikorovere has five short vowels--i, e, a, o, and u, and all of these vowels also have long counterparts. This vowel length is not predictable. One must simply memorize that certain vowels are long and the others are short. Long vowels do arise across morpheme boundaries (as we shall show in a later section), but there are numerous long vowels in morpheme internal position as well. The question that must be raised here is whether long vowels behave (from the point of view of tone) like single vowels or like vowel sequences. That is, are long vowels single tone-bearing elements having the property of length, or are long vowels a sequence of two identical vowels each of which is a tone-bearing element? ('Identical' here should be understood to mean identical with respect to vowel quality, not tone.)

The evidence is overwhelming that the proper analysis is that long vowels are best represented as a sequence of two identical tone-bearing elements. Take, first, the case of verb stems of the shape -CV:C_1-a, where V: indicates a long vowel. Examples are given in (16).

(16)	single segment representation	vowel sequence representation	
	u-má:l-a...	u-máál-a...	'to be quiet'
	u-lé:h-a...	u-léeh-a...	'to bid farewell'
	u-ví:h-a...	u-víih-a...	'to despise'
	u-thé:ˇs-a...	u-théésˇ-a...	'to lift'

Suppose that the long vowels in (16) were represented as a single vowel bearing the property of length. The analysis so-far proposed would then predict the following derivation:

(17)	u-ma:l-a....	
	u-má:l-a....	ITA'
	*u-má:l-á....	HD

No other rules would operate in this derivation and thus the incorrect shape *u-má:l-á... would be derived. On the other hand, the correct phonetic shape would result if long vowels are treated as a sequence of identical vowels.

(18)	u-maal-a....	
	u-máal-á....	ITA'
	u-máal-a....	WFL
	u-máál-a....	HD

No other rules would be applicable in this derivation, and the correct form u-máál-a... results.

Verbs such as those in (16) thus constitute one piece of evidence for the vowel sequence representation of long vowels, since only that representation allows the independently motivated tonal rules of Ikorovere to yield the correct phonetic representations. A second piece of evidence is provided by verbs such as those in (19).

(19)	u-má:líh-á.../u-má:líh-a% 'to quieten'	u-máálíh-á.../u-máálíh-a%
	u-lé:hán-á.../u-lé:hán-a% 'to bid one another farewell'	u-léehán-á.../u-léehán-a%
	u-thé:ˇsíy-á../u-thé:ˇsíy-a% 'to be lifted by'	u-théésˇíy-á../u-théésˇíy-a%

If the long vowels in (19) were represented as a single vowel with the property of length, the following incorrect derivation would result.

(20) u-ma:lih-a...

u-má:lih-á... ITA'

u-má:lih-a... WFL

*u-má:líh-a... HD

On the other hand, if long vowels are represented as a sequence of two identical short vowels, the proposed rules will automatically derive the correct surface forms without any adjustments.

(21) u-maalih-a... u-maalih-a%

u-máalíh-a... u-máalíh-a% ITA'

u-máálíh-á... u-máálíh-á% HD

inapplicable u-máálíh-a% PFL

A third case where the single vowel representation of long vowels leads to incorrect phonetic representations can be seen by examining the data in (22).

(22) u-thúthú:^{v}s-á... u-thúthúú^{v}s-á... 'to startle'

u-várá:n-á.... u-váráán-á.... 'to be stuck together'

u-húwé:l-á.... u-húwéél-á... 'to fill a hole'

Once again, if long vowels are represented as a single vowel, the rules that have been independently motivated will yield incorrect results, as (23) shows.

(23) u-thuthu:^{v}s-a...

u-thúthu:^{v}s-á... ITA'

u-thúthu:^{v}s-a... WFL

*u-thúthú:^{v}s-a... HD

Representing long vowels as a sequence of two vowels does produce the correct surface shapes for the examples in (22). The derivation in (24) illustrates this point.

(24) u-thuthuus^{v}-a....

u-thúthuú^{v}a-a.... ITA'

u-thúthúús^{v}-á.... HD

Further evidence for the vowel sequence representation of long vowels is provided by the two examples in (25).

(25) u-kúmá:níh-a.... u-kúmááníh-a... 'to join together'

u-kórómé:lih-a u-kóróméélih-a 'to cause to be suspended'

The derivations in (26) below show that in each case the single vowel representation of long vowels leads to incorrect phonetic shapes, while the derivations in (27) show that the vowel sequence representation in both cases makes correct predictions about the surface forms.

(26) u-kuma:nih-a.... u-korome:lih-a

u-kúma:níh-a.... u-kóromé:lih-a ITA'

*u-kúmá:níh-á.... *u-kórómé:líh-a HD

(27) u-kumaanih-a... u-koromeelih-a

u-kúmaánih-a... u-kóroméelih-a ITA'

u-kúmáánih-a... u-kóróméélih-a HD

Although additional support for representing long vowels as a sequence of vowels can be derived from simple infinitives, the preceding data clearly establish the validity of such representations; much additional evidence will emerge as we carry our analysis of Ikorovere tone into other verbal constructions.

Although in general long vowels do not present any new problems (as can be seen by examining the preceding derivations where the rules that were based originally on short vowels extend automatically to cover long vowels), one additional tone rule must be postulated in order to assign the correct surface tones to certain words containing long vowels. The need for an additional rule can be seen by comparing the examples in (16), which represented phrase-medial pronunciations, with those in (28), which represent phrase-final pronunciations.

(28) u-máal-a% 'to be quiet'

u-léeh-a% 'to bid farewell'

u-víih-a% 'to despise'

u-théés^{v}-a% 'to lift'

Transcription note: An acute sign over the first mora of a long vowel and the absence of a mark over the second mora indicates that the long vowel is pronounced as a falling-toned vowel. All contour tones in Ikorovere can be analyzed ultimately as a sequence of tones. A falling tone is represented as the sequence HL. Rising tones will be represented as a sequence LH. We will transcribe rising-toned long vowels by leaving the first mora of the vowel unmarked and placing an acute sign over the second mora. Long vowels pronounced with a level high tone will be transcribed by placing the acute sign over both mora of the vowel, while long vowels pronounced on a level low tone will be left unmarked.

Comparing u-máal-a% with u-máál-a..., it can be seen that the expected doubled high tone on the second mora of the long vowel does not appear in phrase-final position. We assume that this alternation should be accounted for in terms of another rule lowering a high tone in an environment that makes reference to the end of a phrase.

The conditions under which this new tone lowering process operates require some discussion. The first crucial point about the rule is that it affects only a high tone on the second mora of a long vowel. This can be seen by considering examples such as u-lówól-a; the high tone on the second vowel of the verb stem is retained in all contexts. What distinguishes u-lówól-a and other verbs of that structure from u-máal-a% and the other verbs in (28)? The only difference is that in the case of u-lówól-a there is a consonant between the first and the second vowel of the verb stem, whereas in the case of u-máal-a% there is no consonant.

The second crucial point about this instance of tone lowering is that it affects a vowel that is penultimate in the phrase. The high tone on the second part of a long vowel in the following examples is not affected, and the absence of lowering can be attributed to the limitation to penultimate position: u-máálíh-a%, u-kóróméélih-a%. Further evidence that the lowering does take place in penultimate position in the phrase is provided by the following examples.

(29) u-hókóléél-a... / u-hókóléel-a% 'to return for s.t.'

u-kákácééh-a... / u-kákácéeh-a% 'to dry s.t.'

u-thíkínééh-a.. / u-thíkínéeh-a% 'to surprise, perplex'

In u-máal-a% the high tone which gets lowered is the one associated with the second stem vowel; in u-hókóléel-a% the lowered high tone is associated with the fourth stem vowel. But in both instances the lowered high tone is penultimate, suggesting that this is indeed the relevant consideration.

The third point to note about this tone lowering process is that not every high tone on the second mora of a long vowel lowers when in penultimate position. Recall the examples in (22), such as u-váráán-á... The phrase-medial pronunciation of these items was given in (22); (30) below indicates the phrase-final pronunciation.

(30) u-thúthúV́s-a% 'to startle'

u-váráán-a% 'to be stuck together'

u-húwéél-a% 'to fill a hole'

The only difference between the phrase-medial forms in (22) and the phrase-final forms in (30) is that the rule PFL has applied to the latter, lowering the high tone on the final vowel. The crucial point is that the high tone on the second mora of the long vowel does not lower, even though it is in penultimate position in the phrase. What is the difference between the penultimate high tone that lowers in examples such as u-máal-a% and u-hókóléel-a% and the penultimate high tone that does not lower in examples such as u-váráán-a%? The answer is simple. The high tone that lowers is a doubled high tone while the high tone that fails to lower is a primary high tone.

Having now isolated the factors that determine the alternation between u-máál-a... and u-máal-a%, and between u-hókóléél-a... and u-hókóléel-a%, let us briefly examine how this alternation pattern might be analyzed. One approach would be to treat the alternation as a reflection of a constraint on the rule HD. That is, we might constrain HD so that it will not double a high tone onto the second mora of a long vowel if that mora is in penultimate position in the phrase. Placing such a constraint on HD would perhaps be cumbersome, but such an approach would yield the correct data as far as simple infinitives are concerned. Later we will argue against this sort of 'blocking' approach to the alternation. The alternative to constraining HD is to permit HD to assign a high tone to the penultimate vowel in u-máal-a% and in u-hókóléel-a%, but postulate another rule to lower that high tone. Call this rule LONG FALL (LF). The basic form of the rule would be roughly as in (31).

(31) $\overset{H}{\underset{V}{\downarrow}}\ \overset{H}{\underset{V}{\downarrow}} \longrightarrow H\ L\ /\ \_\_\_\_\ L\ \%$

A few comments about this formulation of LONG FALL (henceforth LF) are in order. It is necessary to indicate on the left of the arrow that the two high tones are associated with successive vowels, uninterrupted by a consonant, since we have shown that LF must affect only penultimate high tones that are on the second mora of a long vowel. It is not yet clear whether the successive vowels in (31) have to be identified as being identical vowels. Whether such a restriction is required depends on whether non-identical vowel sequences occur in Ikorovere. There are a limited number of potential examples of successive non-identical vowels--e.g., u-vé(w)úl-a 'to despise', u-cá(w)úš-a 'to heat food', and u-tí(w)úl-a 'to uncover'. The w glide in these examples is faint and it is not certain whether it should be regarded as a phonetic insertion or as part of the underlying structure of the verb stem. If the glide is omitted from underlying structure, then we would have to guarantee that (31) does not affect the vowel sequence that results. A final decision, then, must await a more detailed analysis of words such as u-vé(w)úl-a.

The second point to be noted about (31) concerns the environment to the right of the environmental slash mark. We have already shown that it is necessary to restrict the rule to penultimate position. But why do we require that the ultimate tone be low? This reference to a low-toned ultimate vowel represents one means by which we can successfully restrict (31) so that it lowers just a doubled high tone. Let us examine how this requirement that the ultimate tone be low will successfully restrict (31) to apply in just the right situations.

Consider u-máal-a%. The ultimate vowel of this word is low-toned, though it does not become low-toned in our analysis until the rule WFL applies. Thus, if LF is ordered after WFL, the correct derivation of u-máal-a% can be achieved.

(32) u-maal-a%

u-máal-á% ITA'

u-máal-a% WFL

u-máál-a% HD

u-máal-a% LF

Next look at u-váráán-a%. This item has a low tone on the ultimate vowel only as a consequence of PFL. Thus if we apply LF before PFL, the ultimate vowel of u-váráán-a% will be high-toned and (31) will correctly fail to apply. The derivation is given in (33).

(33) u-varaan-a%

u-váraán-a% ITA'

u-váráán-á% HD

inapplicable LF

u-váráán-a% PFL

Finally, consider u-hókóléel-a%. This item has a low tone on the ultimate vowel at every point in the derivation, consequently (31) will correctly apply.

(34) u-hokoleel-a%

u-hókoléel-a% ITA'

u-hókóléél-a% HD

u-hókóléel-a% LF

To summarize, by requiring in (31) that the ultimate vowel be low-toned, we can limit the rule's application to just doubled highs. But it is necessary to order LF after WFL and before PFL in order to achieve the correct phonetic shapes. An alternative to this sort of analysis would be to assume that LF can somehow refer directly to whether or not a high tone is a doubled high or a primary high. Such a reference would constitute a 'global rule' unless doubled high tones can be given a representation that is distinct from the representation of a primary high. While we think that direct reference to whether a high tone is doubled or not is probably more insightful than the reference to an ultimate low tone in (31), one's choice between these alternatives is not particularly significant for the content of this paper. Therefore, we will assume that LF is formulated as in (31) for the sake of convenience.

The rules that we have proposed so far are listed in (35) in the order in which they must apply.

(35) ITA'
WFL
HD
LF
PFL

All of the examples of infinitival forms that we have so far examined have had consonant-initial verb stems. There are, however, a fairly substantial number of verb stems in Ikorovere that can be claimed to be vowel-initial. (36) provides a range of examples.

(36) a. w-aáp-á.../ w-aáp-a% 'to whisper'

w-eét-á.../ w-eét-a% 'to go, walk'

w-oóp-á.../ w-oóp-a% 'to beat'

w-iír-á.../ w-iír-a% 'to do'

w-uúp-á.../ w-uúp-a% 'to heap'

b. w-iíhán-a 'to call'

w-uúk^{h}úw-a 'to be tired'

w-eétét^{h}-a 'to thresh'

w-aákúl-a 'to peel, scrape, cut'

w-oópól-a 'to redeem'

c. w-uúpúwél-á.../ w-uúpúwél-a% 'to remember'

w-eétékác-á.../ w-eétékác-a% 'to walk'

w-oómólán-á.../ w-oómólán-a% 'to chase'

w-iíhánél-á.../ w-iíhánél-a% 'to call for'

w-aátákác-á.../ w-aátákác-a% 'to beat up'

d. w-oómólániíh-a 'to chase'

w-uúlúmácér-a 'to scold'

w-aáthéélíh-a 'to refuse s.b. s.t.'

w-iíráániíh-a 'to assemble completely'

Transcription note: To repeat a point made earlier, a rising tone on a long vowel will be transcribed by leaving the first mora of the long vowel unmarked and placing an acute sign over the second mora. This transcription corresponds to an analysis where the tone sequence LH is associated with the vowel sequence.

There are two compelling reasons for regarding the verb stems in (36) as being vowel-initial. First, the infinitive prefix has the shape w- before these stems rather than the expected u-. This change in shape would be easily explained if the verb stems are vowel-initial, since it is a common phonological phenomenon for a vowel like u to glide to w before another vowel. Second, these verb stems are overtly vowel-initial when they are used in a context where no prefix precedes the stem. This situation occurs in the imperative--e.g. etet^{h}-á-ní... 'thresh!'

Granting that the verb stems in (36) are vowel-initial, what is the nature of that underlying initial vowel? In particular, it will be readily observed that in all the examples in (36) the vowel after the w- reflex of the infinitive prefix u- is long. This is generally true (the only exceptions being the consequence of a rule to be explored in a later section of the paper). The question is thus: do these verbs have an

initial long vowel in their underlying structure or do they have an underlying short vowel that gets lengthened by a rule?

The answer seems to be unambiguously that these verb stems (in fact, all vowel-initial verb stems) begin with a short vowel. Two compelling arguments support this view. First, when these verb stems are not preceded by a prefix, as in the imperative, their initial vowel is short. Recall the example etet^{h}á-ní... cited above. Second, the tone evidence clearly shows that the vowels are basically short. Suppose that they were underlyingly long. Then w-iíhán-a, for instance, would have the underlying shape /u-iihan-a/. The following derivation would result.

(37) u-iihan-a...

u-íihán-a... ITA'

u-ííhán-á... HD

*w-ííhán-á... other rules

But w-iíhán-a can never be pronounced with a high tone on its final vowel. While postulating an underlying long vowel yields incorrect results, the correct surface shape can be predicted if the initial vowel is short. The following derivation illustrates that given an initial short vowel, ITA' and the other tone rules can specify the appropriate tonal shape.

(38) u-ihan-a

u-íhan-á ITA'

u-íhan-a WFL

u-íhán-a HD

w-iíhán-a other rules

Granting, then, that the verb stems in (36) have an initial short vowel, it seems apparent that this vowel must become long due somehow to the gliding of the infinitive prefix u-. It is not the case that a vowel is always long after a glide such as w in Ikorovere, cf. u-wúlúw-a 'to fall down', u-wúhúl-a 'to burrow', u-wákúl-a 'to scrape smooth', u-wár-á... 'to wear'. It is not even true that a vowel is always long after a word-initial w. In the imperative verb stems such as 'fall down', 'burrow', etc., can be used without a prefix preceding and they are still pronounced with a short vowel after their initial w. Given that there is no automatic lengthening of a vowel after glides, the lengthening of the vowel in the examples in (36) must be directly linked to the gliding of the u- prefix. In other words, the gliding of u- compensatorily lengthens the following vowel. This linkage of gliding and lengthening can

be accomplished by means of a transformational rule such as that in (39).

(39) u-GLIDING (u-GL)

$$\begin{matrix} u & + & V \\ 1 & & 2 \end{matrix} \Longrightarrow \left[\begin{matrix} 1 \\ -\text{syllabic} \end{matrix}\right] \; 2 \; 2$$

Given the rule of u-GLIDING (henceforth u-GL), we can correctly account for the segmental shape of the infinitive verbs in (36). What about the tonal pattern? For the most part, the data in (36) do not require much comment. The occurrence of high tones in these forms clearly follows the same patterns as consonant-initial verb stems exhibit. No new rules are needed. Comment is required, however, about one aspect of the tonal shape of the items in (36). Notice that the long vowel that results from u-GL is pronounced with a rising tone. This rising tone makes considerable sense when we consider the underlying structures involved. The infinitive prefix u- is basically low-toned. The first vowel of the verb stem is high-toned as a result of ITA'. Thus there is a LH tone melody associated with the first two vowels of the underlying representation of w-aáp-á..., w-iíhán-a, and w-uúpúwél-á... Although the u vowel glides, and thus ceases to be an element that can bear contrastive tone in Ikorovere, the low tone associated with the u appears to remain and becomes associated with the extra mora of vowel length that (39) adds to the following vowel. Thus the LH melody that is associated with the first two vowels in the underlying representation of the items in (36) remains as a LH melody associated with the first two vowels of the surface forms of these items. This is clearly an instance of what has been referred to as 'tone preservation' (an underlying tonal shape is preserved even though the segments are rearranged by deletion, insertion, etc.).

We propose the following derivation of an item such as w-aáp-á...

(40)

L L L u-ap-a....	underlying representation
L H L u-áp-a....	ITA'
L H H u-áp-a....	HD
L H H w-aáp-a...	u-GL
LH H w-aáp-a...	tone reassociation

The last step in this derivation involves the assumption that whenever a tone becomes disassociated from a segment (either because the segment is deleted or because the segment ceases to be a tone-bearing element), the tone must reassociate. Various principles for specifying precisely how

this reassociation proceeds have been suggested in the literature on autosegmental phonology. The data in (36) do not, however, present any great problem in this regard. The 'free' (i.e. disassociated) tone is the first tone in the word and it is followed by a 'bound' (i.e. associated) tone, and the first vowel in the word is free (not associated with any tone) and followed by a bound vowel. Given that every tone must be bound to a tone-bearing element at the segmental level, and every tone-bearing element must be bound to a tone, the minimal adjustment in the present case is to associate the free tone with the free vowel. The correct phonetic shape results given this reassociation of tone.

We have not yet exhausted what simple infinitives can tell us about Ikorovere phonology and tonology, but we will postpone to later sections discussion of the remaining problems.

3. THE COMPLEX INFINITIVE

The simple infinitive forms discussed in the preceding section can be made more complex by the insertion of one or more prefixes between the u- prefix and the verb stem. The most important prefixal elements that we must consider are the object prefixes. In Ikorovere there are just five object prefixes (excluding the reflexive prefix, which is not dealt with here due to some additional complexities that are not directly pertinent to the problems being examined). These object prefixes are illustrated below.

(41)

u-léél-a...	'to tell'
u-kí-léel-a	'to tell me'
w-uú-léel-a	'to tell you (child)'
w-aá-léel-a	'to tell him/them'
u-ń-léel-a	'to tell him (child)'
u-ní-léel-a	'to tell us'

Note: The usage of the object prefixes involves a number of complexities that are irrelevant to the present paper. The glosses given are valid, but do not constitute the whole story.

Ikorovere differs from most Bantu languages in that except for class 1/2 nouns (which in Ikorovere are by no means restricted to humans), there are no object prefixes showing concord with the various noun classes. Thus there are no object prefixes that can be used to refer to a class 3/4 noun such as n-th^{h}úpí... (pl. mí-th^{h}úpí...) 'rooster' or a class 5/6 noun such as n-lúkú... (pl. ma-lúkú...) 'stone' or a class 9/10 noun such as i-lák^{h}ú... 'chicken(s)'. It is the absence of prefixes agreeing with these various noun classes that accounts for the reduced inventory of object prefixes in (41)

A few remarks are required concerning the segmental structure of the object prefixes. The 1 sg. and 1 pl. prefixes are obviously -ki- and -ni- respectively. The fact that the u- prefix glides to w- before the 2 and 3 p. object prefixes suggests that in these cases we are dealing with vowel-initial morphemes (unlike -ki- and -ni- which begin with a consonant and thus do not induce the gliding of the infinitive prefix). The vowel after the w- reflex of the infinitive prefix is long, but we have already seen that u-GL compensatorily lengthens the following vowel. Thus it appears that the 2 p. object can be represented as -u- and the 3 p. object as -a-. That leaves us with just the 3 p. (child) object prefix to analyze. In the paradigm in (41) this prefix has the shape -n-. We suggest that the underlying form is actually -mu- and that the u vowel of this prefix deletes before a consonant-initial verb stem, the nasal of the prefix then assimilating to the point of articulation of the following consonant. (42) provides some evidence for this analysis.

(42)	w-aávy-á...	'to look for'	u-mw-áávy-a...	'to look for him (child)'
	w-eétét^{h}-a	'to thresh, beat'	u-mw-éétet^{h}-a	'to beat him (child)'
	u-hík-á...	'to smear'	u-ŋ́-hík-a	'to smear on him (child)'
	u-máálíh-á...	'to quieten'	u-m̀-máalíh-á...	'to quieten him (child)'

Before vowel-initial verb stems, the 3 p. (child) prefix has the shape mw-. Clearly, this shape will follow automatically from an underlying representation such as /mu/, since the rule u-GL will convert the u of the prefix to w when a vowel follows. The other two examples in (42) illustrate the fact that the nasal in the prefix does assimilate to the point of articulation of the following consonant.

Having sketched the segmental aspects of the paradigm in (41), we turn now to the tonal structure. The first thing to observe is that the object prefix bears a high tone in every case. This high tone is doubled onto the following vowel, just as expected. In this paradigm no other high tone is manifested. Thus, in effect, the high tone that one expects ITA' to place on the first vowel of the verb stem in infinitives is not observable at all in a form such as u-kí-léel-a, for if there were the expected primary high tone on the first stem vowel it would be required to double onto the second vowel of the stem. But *u-kí-léél-a is not a possible pronunciation. The problem posed by (41) is thus clear: how is it that there is a primary high tone on the object prefix but not on the first vowel of the verb stem?

Notice, first of all, that we cannot simply say that -ki- (and the other object prefixes as well) gets its high tone as a result of ITA'. That is, we cannot simply revise ITA' so that instead of counting from the beginning of the verb stem it instead starts counting from the object

prefix. Such a revision would lead to the following incorrect derivation.

(43) u-ki-leel-a...

u-kí-leél-a... ITA'

*u-kí-léél-á... HD

If ITA' starts counting from the object prefix, it will correctly place a high tone on the object prefix, but it will incorrectly place a high tone on the second vowel of the verb stem.

It appears, then, that object prefixes must simply be regarded as high-toned as a result of the morphological component and not assigned their high tone by a general rule such as ITA'. (Incidentally, it is not the case that the object prefixes are high-toned in all morphological contexts. It does appear to be true, however, that in all constructions where ITA' applies, the object prefixes are high-toned. There are cases where the object prefixes are high-toned and ITA' is not applicable, so that there is no one-to-one correspondence between high-toned object prefixes and the application of ITA'.) Assuming that the object prefixes are high-toned in the representations that serve as input to the phonology, how do we now account for the fact that ITA' has had no visible impact on the items in (41)? One might, of course, claim that there is an arbitrary limitation on ITA' that blocks it from applying to infinitives that contain an object prefix. Since there are numerous morphological factors governing the application of ITA' (and other tone assignment rules similar to it), this approach is certainly not an impossible one. We shall argue, instead, that the fact that u-kí-léel-a exhibits no visible manifestation of ITA' is simply the consequence of the application of a rule that happens to obscure the fact that ITA' has applied.

The rule that we propose will be referred to as TONE LOWERING (henceforth TL) and can be formulated approximately as in (44).

(44) TONE LOWERING (TL)

H ⟶ L / H ____

This rule says simply that a high tone is lowered if it is preceded by a high tone. This rule obviously does not apply to successive occurrences of high tones resulting from HD. It is just a primary high tone that is lowered after another primary high. TL can be successfully restricted to primary high tones by ordering the rule so that it precedes HD. Thus at the point where TL applies, the only high tones in the representation will in fact be primary highs. Let us now see how TL will permit us to derive the paradigm in (41).

(45)

u-kí-leel-a	u-á-leel-a	
u-kí-léel-á	u-á-léel-á	ITA'
u-kí-léel-a	u-á-léel-a	WFL
u-kí-leel-a	u-á-leel-a	TL
u-kí-léel-a	u-á-léel-a	HD
inapplicable	w-aá-léel-a	u-GL

Note: The relative ordering of WFL and TL cannot be determined from these examples.

Note that in these derivations the high tone that ITA' assigns to the first stem vowel does not get a chance to double onto the second vowel of the stem due to the fact that TL eliminates the primary high assigned by ITA' before HD applies. The first stem vowel is pronounced with a phonetic high tone simply because it occurs after the object prefix, which has a primary high that automatically doubles onto the next vowel.

Support for the claim that ITA' does apply to infinitive verbs that contain object prefixes is provided by paradigms such as that illustrated in (46).

(46)

u-kí-máalíh-á.../	u-kí-máalíh-a%	'to make me quiet'
w-uú-máalíh-á.../	w-uú-máalíh-a%	'to make you (ch.) quiet'
w-aá-máalíh-á.../	w-aá-máalíh-a%	'to make him/them quiet'
u-ḿ-máalíh-á..../	u-ḿ-máalíh-a%	'to make him (ch.) quiet'
u-ní-máalíh-á.../	u-ní-máalíh-a%	'to make us quiet'

The tone pattern exhibited by this paradigm will follow automatically from the analysis that we have proposed. (47) illustrates the derivation that the analysis predicts.

(47)

u-kí-maalih-a...	
u-kí-máalíh-a...	ITA'
u-kí-maalíh-a...	TL
u-kí-máalíh-á...	HD

This paradigm presents important evidence that ITA' applies by virtue of the fact that we see that the subpart of ITA' which assigns a high tone to the third vowel of the verb stem is directly manifested on the surface; only the subpart of ITA' that assigns a high tone to the first vowel of the verb stem is not manifested--and the absence of this manifestation can be seen as the consequence of TL.

Perhaps a couple alternatives to TL should be mentioned, although we are not yet in a position to establish that these alternatives are incorrect. Suppose that we claimed that there is no rule TL, but rather that what is involved in (41) and (46) is that a high tone fails to double when it is preceded by a high tone. This analysis assumes that ITA' does place a high tone on the first stem vowel, but accounts for the failure of this high tone to double onto the second stem vowel by placing a constraint on the doubling process: a high cannot double when it is in turn preceded by a high. Since in (41) and (46) the high tone on the first stem vowel would be preceded by a high-toned object prefix, HD would not affect the second stem vowel.

A second alternative to TL would be to claim that ITA' is constrained so that in order for a high tone to be assigned to a vowel, that vowel must not be preceded by a high tone. With this sort of a constraint on ITA', no high tone would be placed on the first stem vowel when a high-toned object prefix precedes the stem.

Both of the above alternatives to TL will account for the data considered so far. For the time being, we shall simply keep these alternatives in mind, but will continue to assume the validity of TL. Consider next the case where object prefixes are prefixed to vowel initial verb stems. Example paradigms are found in (48)-(52).

(48) w-aávy-á.../ w-aávy-a% 'to look for'

u-ká-ávy-a.../ u-ká-avy-a% 'to look for me'

u-w-áávy-a.../ u-w-áavy-a% 'to look for you (ch.)'

w-á-ávy-a.../ w-á-avy-a% 'to look for him/them'

u-mw-áávy-a.../ u-mw-áavy-a% 'to look for him (ch.)'

u-ná-ávy-a... / u-ná-avy-a% 'to look for us'

(49) w-eétét^{h}-a 'to thresh, beat'

u-ké-étet^{h}-a 'to beat me'

u-w-éétet^{h}-a 'to beat you (ch.)'

w-éétet^{h}-a 'to beat him/them'

u-mw-éétet^{h}-a 'to beat him (ch.)'

u-né-étet^{h}-a 'to beat us'

(50) w-oómól-a 'to chase'

u-kó-ómol-a 'to chase me'

u-w-óómol-a 'to chase you (ch.)'

w-ó-ómol-a 'to chase him/them'

u-mw-óómol-a 'to chase him (ch.)'

u-nó-ómol-a 'to chase us'

(51) w-iíhán-a 'to call'

u-kí-íhan-a 'to call me'

u-w-ííhan-a 'to call you (ch.)'

w-é-éhan-a 'to call him/them'

u-mw-ííhan-a 'to call him (ch.)'

u-ní-íhan-a 'to call us'

(52) w-uúpúwél-á.../ w-uúpúwél-a% 'to remember'

u-kú-úpuwél-á.../ u-kú-úpuwél-a% 'to remember me'

u-w-úúpuwél-á.../ u-w-úúpuwél-a% 'to remember you (ch.)'

w-ó-ópuwél-á..../ w-ó-ópuwél-a% 'to remember him/them'

u-mw-úúpuwél-á.../ u-mw-úúpuwél-a% 'to remember him (ch.)'

u-nú-úpuwél-á.../ u-nú-úpuwél-a% 'to remember us'

Let us begin our examination of these paradigms by accounting for the segmental aspects. First of all, consider the -ki- and -ni- prefixes. They appear to assimilate their vowel completely to the following vowel. We will refer to the process that accomplishes this complete assimilation as VOWEL ASSIMILATION (henceforth, VA). The -a- object prefix likewise completely assimilates to the following vowel, but before doing so it has the effect of lowering a u or i vowel at the beginning of the verb stem to o and e respectively. Once that lowering of the high vowel occurs, the -a- itself assimilates to that vowel. The lowering of high vowels induced by the -a- object prefix will be referred to as VOWEL LOWERING (henceforth, VL). The rules of VA and VL will be formulated as in (53) and (54).

(53) VOWEL ASSIMILATION (VA)

V V
1 2 ==⇒ 2 2

(54) VOWEL LOWERING (VL)

$$V \longrightarrow [\text{-high}] \;/\; \begin{bmatrix} V \\ \text{-high} \end{bmatrix} \;\_\_$$

VL is assumed to precede VA, of course, since the -a- object prefix must lower the following vowel before it assimilates the quality of that vowel. As formulated, VL says that any non-high vowel will induce lowering of a following high vowel. So far we have only seen that the low vowel a induces lowering. Later we will see that the mid vowels e and o also condition the application of VL.

In (53) VA is formulated so that in any sequence of vowels, the first will assimilate completely to the second. This rule must obviously not apply to the u vowel that glides before another vowel rather than assimilating to it. Thus /u-íhán-a/ must become w-ííhán-a rather than *i-íhán-a. The correct results can be obtained either by ordering u-GL before VA or by restricting VA so that it does not affect u. We prefer the former approach, since it appears to us that the only reason that u does not participate in the complete assimilation process is because it glides instead. The rule ordering approach says precisely that. The approach that would restrict VA so that it does not affect the vowel u says that not only does u glide, but there is also a specific constraint on VA that it does not affect u, as though these two facts were totally unrelated.

We have so far accounted for the behavior of -ki-, -ni-, and -a- in the paradigms in (48)-(52). The 3 p. (ch.) prefix -mu- requires no special comment, since as noted earlier the vowel of this prefix glides and lengthens the following vowel. The rule of u-GL will obviously account for these facts. The last object prefix to be considered is the 2 p. object -u-. Examination of the data establishes clearly that this u vowel is also subject to the rule u-GL. Notice, however, that these examples require some statement about how u-GL is to be applied. Consider an example like u-w-áávy-a... This item has the underlying segmental shape /u-u-avy-a.../; in this representation we find two u vowels, both of which are in the appropriate environment for u-GL to apply. In order to achieve the correct results, however, it is necessary to guarantee that the u further to the right glides rather than the u further to the left. This result can be achieved by specifying that u-GL applies iteratively, starting at the end of the word and working across the word in a leftwards fashion. Given this mode of application, the rule will scan the representation /u-u-avy-a.../ beginning from the end, and the first u vowel that it will encounter is the object -u-. Since

this u is in the appropriate environment for u-GL to apply, that rule will apply and yield the representation /u-w-aavy-a/. Now u-GL will continue scanning the representation. It will check the infinitive u-, but since (as a result of the first application of u-GL) this u is no longer followed by a vowel, it will not be affected. Thus the correct surface form will be derived.

There is just one other point about the segmental structure of the paradigms in (48)-(52) that requires discussion. Recall that the rule of u-GL compensatorily lengthens the following vowel. But consider an example such as w-á-ávy-a... 'to look for him/them'. The underlying segmental structure here is /u-a-avy-a.../. Given the formulation of u-GL proposed in (39), application of that rule would yield /w-aa-avy-a.../, where an extra mora of vowel length has been added to the following vowel. But on the surface there are no overlong vowels in Ikorovere (i.e. vowels of more than two mora). We could conceivably explain this absence of compensatory lengthening in examples such as w-á-ávy-a... by constraining the compensatory lengthening part of u-GL so that it applies just in case a single vowel follows the u. Alternatively, we could allow the compensatory lengthening rule to add the extra mora of vowel length, but then invoke a rule that will shorten overlong vowels (i.e. vowels that have three or more mora). Call such a rule VOWEL REDUCTION (VR). Assuming such a rule, the derivation of w-á-ávy-a... would proceed as in (55), ignoring the question of tone for the moment.

(55) u-a-**avy**-a...

w-aa-avy-a... u-GL

w-a-avy-a... VR

In the next section of this study we will show that a rule such as VOWEL REDUCTION (henceforth, VR) is independently motivated in Ikorovere. We will therefore make use of that rule to explain the apparent lack of compensatory lengthening in the paradigms under discussion. VR can be formulated approximately as in (56).

(56) **VOWEL REDUCTION** (VR)

VVV ⟹ VV

Note: Recall that because of the application of VA, all successive vowels in Ikorovere will be identical in quality. Because of this constraint it is not necessary to specify which of the vowels is deleted.

This formulation of VR is based on the assumption that VA applies earlier and assimilates the quality of all vowels in a sequence to the rightmost vowel. (57) illustrates the case where VA is involved in the derivation.

(57) u-a-ihan-a

w-aa-ihan-a u-GL

w-aa-ehan-a VL

w-ee-ehan-a VA

w-e-ehan-a VR

Notice that we have assumed that VA is an iterative rule, working (like u-GL) from the end of the word leftwards. Thus given a vowel sequence such as aae, it will first of all assimilate the rightmost a vowel to the following e, giving aee. Then it will continue working its way leftwards and will assimilate the remaining a to the following e, yielding eee. VR will then delete one mora from this overlong vowel.

Let us now turn to the tonal aspect of the paradigms in (48)-(52). For the most part, little comment is required. The points that do demand discussion can all be observed in (48), so we will limit our attention to that paradigm. Consider the alternation exhibited by the 1 sg. object form; this clearly follows from the proposed rule LF. (58) illustrates how our analysis will account for these forms.

(58)

u-kí-avy-a...	u-kí-avy-a%	
u-kí-ávy-a...	u-kí-ávy-a%	ITA'
u-kí-avy-a...	u-kí-avy-a%	TL
u-kí-ávy-a...	u-kí-ávy-a%	HD
inapplicable	u-kí-avy-a%	LF
u-ká-ávy-a...	u-ká-avy-a%	VA

Note: The relative ordering of VA and the rules affecting tones cannot be determined from the present data. Recall that the rule LF as formulated in (31) operates on successive vowels, but does not require them to be identical in quality. Changes in the details of LF could conceivably affect whether any ordering between VA and the tone rules is necessary.

It should be noted that in the derivation above, the high tone associated with the first stem vowel behaves like doubled high tones behave in that it undergoes the lowering process we have labeled LF. Recall that only doubled highs are subject to this process. The applicability of LF to this high tone is thus nicely compatible with our analysis, which says that the high tone on the first stem vowel in u-ká-ávy-a... is not a primary high but rather a double of the high tone on the object prefix.

Unfortunately, the facts under discussion cannot be used to choose between our analysis (which includes the rule TL) and the alternative analysis mentioned earlier that claims that there is a primary high on the first stem vowel of u-ká-ávy-a..., but that it fails to double because there is a constraint on HD that blocks a high tone from doubling when there is an immediately preceding high tone. The reason that the application of LF to u-ká-avy-a% cannot be taken as evidence in support of our analysis is that we managed to find a formulation of LF in (31) which did not specifically restrict that rule to a doubled high tone. Rather, (31) says that a high tone on the second mora of a two vowel sequence will lower when it is in penultimate position and followed by a low-toned ultimate vowel. That condition is satisfied in the representation /u-kí-ávy-a%/. Thus as long as the formulation of LF given in (31) can be maintained, we cannot use these facts to support our analysis and its appeal to TL.

Consider next the example u-w-áávy-a... 'to look for you (ch.)'; the only thing about this form that is noteworthy is that when the -ú- object prefix glides and ceases to be a tone-bearing element, the high tone associated with it remains behind, associating with the extra mora of vowel created by u-GL. The derivation is shown in (59).

(59)

```
L H L   L
u-u-ávy-a...

L H H   L      ITA'
u-u-ávy-a...

L H L   L      TL
u-u-ávy-a...

L H H   L      HD
u-u-ávy-a...

L H  H   L     u-GL
u-w-aávy-a...

L   HH   L     reassociation of tone
u-w-aávy-a...
```

Once again we see that the reassociation of tone is fairly straightforward; a free tone will associate with a free vowel (given that there is a free vowel available to it).

Let us turn now to w-á-ávy-a... 'to look for him/them'; the problem that this item poses is this: what happened to the low tone associated with the infinitive prefix? There is no trace of this low tone in the surface form. This item should be contrasted with w-aávy-á... 'to look for', where we see the low tone of the infinitive prefix preserved.

Recall that the form w-á-ávy-a... also involves a loss of one vowel mora by virtue of the application of VR. One might suspect therefore that there is a connection between the application of VR and the loss of the low tone associated with the infinitive prefix. We will argue in detail in the next section that this is indeed the case. Much more evidence will have to be accumulated before we can suggest a principled means whereby the loss of the infinitival low tone can be predicted. Further discussion of w-á-ávy-a... must therefore wait until the next section.

The remaining examples in (48), as well as the paradigms in (49)-(52), present no new problems. Let us move on, therefore, to another aspect of complex infinitives in Ikorovere. There is another prefix that can appear in the infinitive and which we claim should be treated in a fashion that parallels our treatment of the object prefixes. This is the diminutive prefix -ɣi-. Some examples are given in (60).

(60) u-ɣ́í-pát^{h}-a 'to get s.t. little'

u-v́í-lówol-a 'to carry s.t. small'

u-v́í-lókotáníh-a 'to pick up a little of s.t.'

u-v́é-ét-a.../ u-v́é-et-a% 'to be able to walk a little ways'

u-v́á-ák^{h}el-a 'to receive s.t. little'

The segmental aspects of the above forms are straightforward: the i vowel of the diminutive prefix will completely assimilate to the initial vowel of -et- 'walk', -ak^{h}el-, and other vowel-initial stems. Otherwise, the diminutive prefix is unaltered. Turning to the tonology of the items in (60), we see that the diminutive prefix bears a high tone in all the examples, as does the vowel that immediately follows (in these examples, the first stem vowel). Clearly, the high tone on the first stem vowel can be attributed to the effects of HD. The high tone on the first stem vowel does not seem to be a primary high, since there is no doubling onto the second stem vowel. The rule ITA' appears, however, to be still at work in these forms, since we can see that a high tone still shows up on the third vowel of the verb stem (when it is not word-final). The careful reader will have noted that the tone pattern in (60) is precisely the tone pattern associated with object prefixes. Thus if the diminutive is treated in analagous fashion, i.e. if it has an underlying high tone associated with it, then the items in (60) will follow automatically from our analysis. The derivation of u-ɣ́í-lókotáníh-a is shown in (61).

(61) u-v́í-lokotanih-a

u-v́í-lókotánih-a ITA'

u-v́í-lokotánih-a TL

u-v́í-lókotáníh-a HD

The most significant thing about -v́sí- for our present purposes is that it is able to be combined with the object prefixes in the same verbal form. Some examples:

(62) u-v́sí-váh-a 'to give s.t. small'

u-v́sí-kí-vah-a 'to give s.t. small to me'

u-v́sí-pát^{h}el-a 'to get s.t. small for'

u-v́sí-ki-pát^{h}el-a 'to get s.t. small for me'

u-v́sí-cárihél-á... 'to use a small amount to fill s.t. up'

u-v́sí-kí-carihél-á... 'to fill slightly for me'

u-v́sí-páparúlél-a 'to separate s.t. small for'

u-v́sí-kí-paparúlél-a 'to separate s.t. small for me'

In these examples, we see that the diminutive prefix is located in front of the object prefix and bears a high tone. We have already accounted for this fact by claiming that the diminutive is specified as having a high tone in underlying representation. The vowel of the object prefix is also high-toned; this high tone can plausibly be attributed to HD. However, the object prefixes have been assumed to be high-toned in the underlying structure of the infinitive. This primary high tone on the object prefix is not manifested at all on the surface in (62) since it has not doubled onto the following vowel (the first stem vowel). The failure of this doubling to occur suggests that there is no primary high on the object in these examples. But why not? An explanation is, of course, available. We have earlier postulated a rule TL, which lowers a high tone that is preceded by another high tone. Since both the diminutive and the object prefix are high-toned, the object prefix will lower after the diminutive. But now notice that the primary high tone that ITA' places on the first stem vowel is also missing in the above examples (whereas the high tone that ITA' places on the third stem vowel is present, at least when that vowel is not word-final). We must again assume that TL is responsible for this loss of the primary high on the first stem vowel. The derivation of u-ší-kí-paparúlél-a must be as follows.

(63) u-v́sí-kí-paparulel-a

u-v́sí-kí-páparúlel-a ITA'

u-v́sí-ki-paparúlel-a TL

u-v́sí-kí-paparúlél-a HD

In order to achieve this derivation we must formulate TL so that it will lower any number of successive high tones after a high tone. This can be done by applying TL iteratively, starting at the end of the word

and scanning the string leftwards. (This, of course, is exactly the mode of application that we have claimed to be necessary for u-GL and VA.) Given this mode of application, TL will first of all affect the high on the first stem vowel, lowering it due to the preceding high on the object. Then TL will lower the high tone on the object prefix since it is preceded by a high on the diminutive. The correct surface form will thus be achieved.

At this point let us review the two alternatives to TL mentioned earlier and see whether they can account for the preceding data. Recall that one alternative was to claim that there is a condition on HD that prevents a high from doubling if that high is preceded by another high. This analysis runs into difficulty with an example such as u-ší-kí-paparúlél-a. Given that the diminutive prefix and the object prefixes are basically high-toned and given that ITA' assigns a high to the first and the third stem vowels, we will have the intermediary representation /u-ší-kí-páparúlel-a/. The proposed constraint on HD will prevent the high on the first stem vowel from doubling, and the high tone on the object prefix likewise will not be able to double. Application of HD will thus yield /u-ší-kí-páparúlél-a/. But this is incorrect. The item is not pronounced with a high tone on the first stem vowel, and we have no independently motivated rule that would lower this high tone (since this alternative is attempting to do without the rule TL). Consequently, the alternative to TL that involves simply placing a constraint on HD will not work.

The second alternative to TL was to block the placement of a high tone by ITA' onto a vowel that in turn is preceded by a high tone. Assuming again that the diminutive prefix and the object prefixes are high-toned in the infinitive construction, then our initial representation will be /u-ší-kí-paparulel-a/. ITA' will not be able to apply to the first stem vowel since it is preceded by a high tone, thus ITA' will just assign a high to the third stem vowel. The result will be /u-ší-kí-paparúlel-a/. As currently formulated, HD would predict that the high tone on the object would double onto the next vowel. But this would lead to the wrong results. In order to achieve the correct phonetic representation, it would be necessary to invoke a condition on HD that blocks a high from doubling when a high precedes. In other words, we would have to say both that ITA' does not apply when the first stem vowel is preceded by a high and that HD does not apply when a high is preceded by a high. Thus to do without TL we must place a constraint on two separate rules referring to preceding high tones. Data to be considered later will show that even constraining both ITA' and HD will not successfully account for the same range of data as does TL.

There is one other prefix that can occur in the infinitive--the negative prefix -hí-. We have omitted discussion of the negative here since it involves certain complications that are not directly pertinent to this study and adds little to our understanding of the rules so far developed. The interested reader will find a discussion of the negative prefix in our forthcoming monograph on Ikorovere phonology and morphology.

(Part II will appear in Vol. 10, No. 1, Spring 1980)

NOTES

*We would like to take this opportunity to express our thanks to the University of Illinois Research Board which has generously supported our research on Makua for some three years. We would also like to acknowledge the assistance of the African Studies Program of the University of Illinois for its financial contributions to this study. Whatever is of value in this paper was made possible by the great patience, perseverance, and good humor exhibited by Waane.

[1]Mozambique is regarded as the homeland of the Makua people, and it is in that country that the bulk of the speakers of the language are located. There are, however, a number of dialects spoken in Tanzania. We are personally familiar with two of these dialects, Ikorovere (spoken in Tunduru district) and Imit^{h}upi (spoken in Masasi district). Our work on the latter dialect began in the Fall of 1978 and is still in progress. Although the tonal structure of Imit^{h}upi is very similar to the structure of Ikorovere, it exhibits some additional complications which are quite interesting but require that it be given separate consideration. Unfortunately, we have had no access to Makua speakers from Mozambique and thus cannot determine to what extent their speech diverges from the Tanzanian dialects.

[2]Although Waane has not spoken Makua on a day-to-day basis since about the age of eight (excluding annual vacations home to Tunduru district), the accuracy of the data he has provided is vouched for by (a) the internal consistency of the immensely complex body of material that he has painstakingly assembled for us and (b) the considerable agreement exhibited between the Ikorovere material and the data recently collected from Imit^{h}upi.

[3]We have in mind here such approaches to phonology as 'natural generative phonology' (cf. Hooper 1976).

[4]Our tonal rules will be formulated on the assumption that the tonal specifications of an utterance are specified at a level, or 'tier', separate from segmental specifications. These tonal specifications are associated with tone-bearing elements by means of 'association lines'. There is not necessarily a one-to-one pairing of tones and tone-bearing elements (e.g. a contour tone on a short vowel would involve a case where two separate tones, LH in the case of a rising tone and HL in the case of a falling tone, would be associated with a single vowel). For discussion, see the literature on 'autosegmental phonology', particularly, Goldsmith 1976.

REFERENCES

GOLDSMITH, John A. 1976. Autosegmental phonology. Bloomington, Indiana: Indiana University Linguistics Club.

HOOPER, Joan B. 1976. An introduction to natural generative phonology. New York: Academic Press.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

SUBJECT TO OBJECT RAISING IN AN EST FRAMEWORK: EVIDENCE FROM QUECHUA*

Peter Cole and Gabriella Hermon

The purpose of this paper is to examine the implications for linguistic theory of certain aspects of the structure of complement clauses in the Quechua languages. Data will be drawn from Imbabura Quechua (IQ), a Quechua language spoken in Northern Ecuador. Similar data are also found in other Quechua languages, (e.g., in Ancash Quechua), but we shall restrict ourselves to IQ here. Our aim is to compare the crosslinguistic adequacy of two approaches to object complementation which we shall refer to as the raising and the nonraising analyses. We shall argue that the raising analysis may be generalized to languages that are structurally quite different from English. This, however, is not true with regard to the nonraising analysis. Thus, we argue for the adoption of the raising analysis crosslinguistically. A major goal of the paper is to examine the implications for the Extended Standard Theory (EST) of subject to object raising. We shall show that the incorporation of raising requires modifications in several of the central tenets of EST.

1. Object Complementation in English

There are certain syntactic properties associated with sentences like (1) in English.

(1) Frank believes $\left\{\begin{matrix}\text{Charles}\\ \text{him/*he}\end{matrix}\right\}$ to be asleep.

Sentences like (1) differ from those like (2) in a number of ways.

(2) Frank believes $_{S}$[that $\left\{\begin{matrix}\text{Charles}\\ \text{he/*him}\end{matrix}\right\}$ is asleep]

First, the underlying complement subject of (1) (Charles) is susceptible to a variety of syntactic rules, while that of (2) is not. Some examples of this difference are given in (3)-(6).

(3) Passivization
  a. Charles is believed by Frank to be asleep.
  b. *Charles is believed by Frank that is asleep.

(4) Reciprocal Interpretation
  a. Charles and Frank believe each other to be asleep.
  b. *Charles and Frank believe that each other are asleep.

(5) Disjoint Reference
  a. Charles_i believes $\left\{\begin{matrix}\text{*him}_i\\ \text{him}_j\end{matrix}\right\}$ to be asleep.
  b. Charles_i believes that $\text{he}_{i,j}$ is asleep.

(6) Reflexive Interpretation
a. Charles believes himself to be asleep.
b. *Charles believes that himself is asleep.

Second, the complement clause in (1) is nonfinite (untensed), and lacking verb agreement, while that in (2) is finite. Third, the underlying complement subject in (1) appears in accusative case, while that in (2) is in nominative case.

Within generative syntax there have been two widely accepted explanations proposed for the differences between (1) and (2). In the Standard Theory the properties of (1) have been analysed as due to the application of Subject to Object Raising (SOR). This rule is claimed to map an underlying structure like (7) onto a derived structure roughly like (8).

(7) $_S[NP_1 \quad V \quad _S[NP_2 \quad VP]]$

(8) $_S[NP \quad V\text{-}\ NP_2 \quad _S[\emptyset \quad to \quad VP]]$

The differences between (1) and (2) are claimed to be due to the fact that (1) has a derived structure like (8), while the derived structure of (2) is like (7). The rules in (3)-(6) are assumed to be clause bounded.[1] Thus, they apply to the raised (accusative) NP, but not to the unraised (nominative) NP.

In contrast to the raising analysis, within the framework of the Extended Standard Theory (EST), it has been proposed that (1) has a structure like (7) in both underlying and derived structure. According to this approach, the differences between (1) and (2) are not due to the derived constituency of the complement subject (which is claimed to be the same in both sentences), but rather to differences in the internal structure of the complement clause. The rules involved in (3)-(6) and similar examples are presumed not to be clause bounded. Rather, the failure of these rules to apply to the complement subject in sentences like (2) is explained as due to the Tensed-S Condition (Chomsky 1973 inter alia), according to which no rule may involve two elements $\underline{X}$ and $\underline{Y}$ in the structure $\ldots\underline{X}\ldots[_{\alpha}\ldots\underline{Y}\ldots]\ldots$, where α is a tensed sentence. In later work Chomsky (1977 inter alia) has made it clear that although the language particular realization of finiteness may vary, the general principle of islandhood of finite clauses is claimed to hold crosslinguistically.

In the most recent version of EST, that proposed by Chomsky (1978) in "On Binding", the immediate determining factor is not finiteness, but rather the superficial case marking of the complement subject. More specifically, the finite nature of the complement clause determines the (nominative) case of the complement subject. Nominative case, in turn, causes the complement subject to be an island (the Nominative Island Condition [NIC]). The mechanism employed by NIC is as follows: according to NIC, a nominative anaphor cannot be free in $\overline{S}$ in logical form. This condition has the effect of blocking anaphoric relations between subjects of tensed clauses and antecedents in a higher clause.[2] The overall effect is similar to that of the Tensed-S Condition.

The raising and nonraising approaches make radically different claims regarding the structure of complex sentences and the conditions on rule application. How might the approaches be distinguished? One possibility is to look at the implications of the two analyses for other aspects of English grammar. Although promising in principle, in practice it has been impossible to reach a definitive resolution to the controversy in this way. Both analyses appear to account for roughly the same range of data in English. (See Postal (1974) and (1977), Bresnan (1976), and Bach (1977).)

A more practical way to distinguish between the two analyses is crosslinguistic. Do other languages exhibit an array of facts similar to that found in English? If so, can one of the approaches be generalized crosslinguistically while the other cannot? If it can be shown that one approach explains similar data in a broad range of languages, while the other is linked to peculiarities of English, the approach with wider crosslinguistic application is clearly to be preferred.

In Sections 2-5 we examine certain aspects of complementation in Imbabura Quechua.[3] We show that data analogous to that in sentences (3)-(6) cannot be due either to the finiteness of the complement clause or to surface case marking. Rather, they would appear to be due to the derived constituency of the underlying complement subject. These data suggest that only the raising analysis can be extended crosslinguistically, and that SOR is the correct analysis whenever a range of facts like that seen in (1)-(6) occurs.

In section 6 we argue that the analysis proposed for IQ must be extended crosslinguistically to all other languages exhibiting island phenomena. In sections 7--9 we show that even with major revisions in trace theory the conditions on binding are inadequate as explanations of islandhood, and must be rejected in favor of clause boundedness.

In the sections which follow we shall present a variety of arguments in favor of a raising analysis for IQ. The theoretical framework of our discussions is that of EST as presented in "On Binding". We have adopted this framework in order to show that our conclusions, though at variance with proposals current in the EST literature, are in face quite compatible with the fundamental principles upon which EST is based.

2. A Brief Introduction to Quechua Morphology and Syntax

In sections 3-5 we shall present a variety of arguments in favor of a rule of SOR in IQ. A brief description of some of the salient syntactic and morphological properties of the Quechua languates, and of IQ in particular, is desirable before the arguments themselves are presented. The Quechua languages exhibit many of the morphological and syntactic characteristics associated with OV languages (Greenberg 1963 inter alia). The preferred word order is SOV, although in matrix clauses SVO occurs freely

as well. Nouns are marked for case (-Ø 'nominative', -ta 'accusative') and matrix clause verbs agree with the subject in person, and in some instances in number. This is illustrated in (9).

(9) a. SOV Order
Juan aicha-ta micu-rca
Juan meat-acc eat-past-3
b. SVO Order
Juan micu-rca aicha-ta
Juan eat-past-3 meat-acc
'Juan ate meat.'

In addition to subject verb agreement, there is also a rule of object agreement, an example of which is given in (10).

(10) Matrix Clause Verb Agreement
Can uya-wa-ngui
you hear-1-2
'You hear me.'

The morphology of matrix clauses differs from that of complements. Complement clauses in Quechua are typically nominalized. In Imbabura, nominalization is obligatory in almost all environments. Therefore, we shall limit our discussion of complementation to nominalized clauses. There is a strong tendency toward SOV order within the nominalized complement clause.[4] Nominalizing suffixes indicating tense are added to the complement verb, and the nominalized verb receives a case marker determined by the grammatical relation of the complement clause to the matrix verb, as illustrated in (11).

(11) [Juan chaya-shca-ta] yacha-ni
Juan arrive-past Nom-acc know-1
'I know that Juan has arrived.'

As seen in (11), the complement clause as a whole receives accusative case because it is the object of the matrix verb yachana 'to know'. In IQ, and in Ecuadorian Quechua generally, there is no verb agreement in nominalized clauses:

(12) Lack of Verb Agreement in Nominalized Clauses
Francisco cri-n [ñuca Quito-man rishca-ta]
Francisco believe-3 I Quito-to go-past Nom-acc
'Francisco believes that I went to Quito.'

In the examples given above, the subject of the complement clause appears in the nominative case. In addition to this pattern, complement subjects may appear in the accusative as well:

(13) a. Complement Subject in Nominative Case
Maria-ca cri-n Francisco cay-pi ca-j-ta
Maria-topic believe-3 Francisco this-in be-pres Nom-acc
'Maria believes that Francisco is here.'

(13) b. Complement Subject in Accusative Case
Maria-ca Francisco-ta cri-n cay-pi ca-j-ta
Maria-topic Francisco-acc believe-3 this-in be-pres Nom-acc
'Maria believes Francisco to be here.'

The complement subjects in (13) show islandhood properties parallel to those found in English (3)-(6), as is shown in (14)-(16).

(14) Disjoint Reference
a. Jose_i cri-n $\left\{\begin{matrix}\text{*pay-ta}_i \\ \text{pay-ta}_j\end{matrix}\right\}$ cayna shamu-shca-ta
Jose believe-3 he-acc yesterday come-past Nom-acc
'Jose_i believes him_j to have come yesterday.'
b. Jose_i cri-n $\text{pay}_{i,j}$ cayna shamu-shca-ta
Jose believe-3 he-nom yesterday come-past Nom-acc
'Jose_i believes that $\text{he}_{i,j}$ came yesterday.'

(15) -llataj Reflexivization
a. Jose_i cri-n pay-lla-ta-taj_i wasi-ta randi-shca-ta
Jose believe-3 himself-acc house-acc buy-past Nom-acc
'Jose_i believes himself$_i$ to have bought the house.'
b. *Jose_i cri-n pay-lla-taj_i wasi-ta randi-shca-ta
Jose believe-3 himself-nom house-acc buy-past Nom-acc
('Jose believes that himself$_i$ bought the house.')

(16) Object Verb Agreement
a. Jose ñuca-ta yacha-wa-n Maria-ta juya-j-ta
Jose I-acc know-1-3 Maria-acc love-pres Nom-acc
'Jose knows me to love Maria.'
b. *Jose yacha-wa-n ñuca Maria-ta juya-j-ta
Jose know-1-3 I-nom Maria-acc love-pres Nom-acc
('Jose knows me that I love Maria.')

Examples (14)-(16) show that in IQ, just as in English, nominative subjects are islands: (14) shows that nominative subjects, in contrast to accusatives, do not undergo disjoint reference. Sentence (15) shows that nominatives are islands with respect to -llataj reflexivization, while (16) shows the islandhood of nominatives with regard to object verb agreement. There are, in fact, no rules which would be expected to distinguish between nominative and accusative noun phrases for which the nominatives do not constitute islands.[5]

In the pages that follow, we shall argue that (13b) and similar examples involve SOR. Within the "On Binding" framework, SOR is an instance of a more general rule, Move α. Thus, we shall contend that the properties of sentences like (16b) are due, not to the internal structure of the complement clause, but rather to the application of Move α and the resulting change in constituent structure. We shall now turn to the arguments for this claim.

3. Argument One: Linear Order

In English, the putative rule of SOR has the effect of changing grammatical structure, but not the linear order of the words in the sentence. Compare (17) and (18), the alleged derived and underlying structures for (1) in the raising analysis.

(17) Frank believes Charles $_{S}$[to be asleep]

(18) Frank believes $_{S}$[Charles to be asleep]

Because there is no overt change in word order, the English data are susceptible to an analysis in which no rule like SOR applies. In the EST nonraising analysis, Charles is simply the subject of an infinitival clause in (1) and a finite clause in (2) (repeated).

(1) Frank believes $\left\{\begin{matrix}\text{Charles}\\ \text{him/*he}\end{matrix}\right\}$ to be asleep.

(2) Frank believes $_{S}$[that $\left\{\begin{matrix}\text{Charles}\\ \text{he/*him}\end{matrix}\right\}$ is asleep]

Were there an overt change in word order, a raising analysis would be uncontroversial, and the alternation would be attributed to the application of Moveα, as is the alternation observed in Subject to Subject Raising (SSR):

(19) It seems that Charles is asleep.

(20) Charles seems to be asleep.

IQ manifests just such an alternation as was seen in (13) (repeated).

(13) a. Complement Subject in Nominative Case
Maria-ca cri-n Francisco cay-pi ca-j-ta
Maria-topic believe-3 Francisco this-in be-pres Nom-acc
'Maria believes that Francisco is here.'
b. Complement Subject in Accusative Case
Maria-ca Francisco-ta cri-n cay-pi ca-j-ta
Maria-topic Francisco-acc believe-3 this-in be-pres Nom-acc
'Maria believes Francisco to be here.'

This alternation parallels that seen in SSR, and appears to be a straightforward application of Moveα. Because crin 'believes' intervenes between Francisco and caypi cajta 'to be here', there is no possibility that Francisco is the derived subject of the complement clause.

It should be noted, furthermore, that SOR in Quechua does not violate the hypothesis that Moveα is structure preserving. If (13b) is derived from a deep structure along the lines of (21), no violation would take place.

(21) NP $_{NP}$ $\triangle$ V $_{\bar{S}}$[NP VP]

In the derivation of (13b), Move α applies to the complement subject, moving it into the empty NP slot in the matrix clause, yielding a derived structure similar to (22).

(22) NP NP V $\overline{S}$[t VP]

Additional support for this derivation is provided by an examination of the full range of word order possibilities in IQ.

(23) a. SOV Order in Main Clause with Underlying Complement Subject in Nominative
Maria-ca Francisco cay-pi ca-j-ta yacha-n
Maria-topic Francisco this-in be-pres Nom-acc know-3
'Maria knows that Francisco is here.'

b. SOV Order in Main Clause with Underlying Complement Subject in Accusative
Maria-ca Francisco-ta cay-pi ca-j-ta yacha-n
Maria-topic Francisco-acc this-in be-pres Nom-acc know-3
'Maria knows Francisco to be here.'

(24) a. SVO Order in Main Clause with Underlying Complement Subject in Nominative
Maria-ca yacha-n Francisco cay-pi ca-j-ta
Maria-topic know-3 Francisco this-in be-pres Nom-acc
'Maria knows that Francisco is here.'

b. SVO Order in Main Clause with Underlying Complement Subject in Accusative
Maria-ca yacha-n Francisco-ta cay-pi ca-j-ta
Maria-topic know-3 Francisco-acc this-in be-pres Nom-acc
'Maria knows Francisco to be here.'

(25) Underlying Complement Subject Precedes Matrix Verb
a. *Maria-ca Francisco yacha-n cay-pi ca-j-ta
Maria-topic Francisco know-3 this-in be-pres Nom-acc
('Maria knows Francisco to be here.')

b. Maria-ca Francisco-ta yacha-n cay-pi ca-j-ta
Maria-topic Francisco-acc know-3 this-in be-pres Nom-acc
'Maria knows Francisco to be here.'

In the sentences of (23) and (24), the word order is consistent with the appearance of Francisco either as derived complement subject or as derived matrix direct object. In these sentences, Francisco may appear in either nominative or accusative case. In contrast, in (25) the word order is consistent only with derived matrix direct objecthood. And in just this environment Francisco may appear only in accusative case. The facts suggest that the base rules of Imbabura[6] allow the following structures.

(26) a. NP $\overline{S}$ V
b. NP V $\overline{S}$

(27) a. NP $_{NP}\triangle$ V $\overline{S}$[NP VP]
b. NP $_{NP}\triangle$ $\overline{S}$[NP VP] V
c. NP V $_{NP}\triangle$ $\overline{S}$[NP VP]

Move α applies to the subject NP of $\bar{S}$, yielding the range of data illustrated in (23)-(25). There would appear to be no reasonable explanation for these data that does not involve raising.

4. Argument Two: Case and the Internal Structure of the Complement Clause

As we discussed previously, there are two sets of facts for which both the raising and the nonraising analyses provide satisfactory accounts in English. These are the case marking facts illustrated in (1) and (2) and the islandhood facts illustrated in (3)-(6). Both the raising and the nonraising analyses account for the core data with respect to the construction in English. We shall show in this section that for IQ the raising analysis accounts for both the case marking and the islandhood facts, but, even were we to assume that the nonraising analysis accounts for the islandhood facts, it provides no explanation for the distribution of case markers.[7]

The SOR account of case marking and islandhood in IQ does not differ significantly from that for English, so we shall only discuss it briefly. Raising results in accusative case because, in derived structure, the underlying complement subject has been moved by Move α into the object position in the matrix clause. The normal application of case marking rules (e.g., rule (68b) of Chomsky (1978)) would mark the noun phrase accusative. The islandhood of the nominative subject could be accounted for in either of two ways: by an analog of NIC (see the next section where this proposal is developed), or by formulation of the rules in (14)-(16) and similar rules as clause bounded. We shall assume the NIC analysis of islandhood in order to deviate minimally from the model proposed in "On Binding".

To turn to the nonraising analysis, NIC appears to provide an account for the islandhood facts, as it does in the raising analysis. However, no account is provided for case marking itself. This is because the internal structure of the complement clause is the same regardless of the case marking of the complement subject. Therefore, it is not possible to attribute complement subject case marking to the finiteness of the complement clause.

Two manifestations of finiteness have been cited in the EST literature: tense (Chomsky (1973) inter alia), and verb agreement (George and Kornfilt (1978)). We would like to show that neither of these is relevant to the choice of case for the complement subject.

As was seen in (12), all nominalized clauses are tensed. The tense is expressed by the choice of nominalizer. The tense system found in nominalized clauses in IQ is given in (28).

(28) Nominalizers used in Complement Clauses in IQ
a. Present: -j, -y
b. Past: -shca
c. Future: -na
d. Subjunctive: -chun, -ngapaj

Since the same tense suffixes appear when the underlying complement subject is either accusative or nominative, it is clear that tense plays no role in case assignment.

Another possible realization of finiteness is verb agreement. It will be remembered that there is no verb agreement in nominalized clauses in IQ, as was illustrated in (12) (repeated).

(12) Francisco cri-n [ñuca Quito-man rishca-ta]
Francisco believe-3 I Quito-to go-past Nom-acc
'Francisco believes that I went to Quito.'

Hence, the occurrence of verb agreement, like that of tense, fails to correlate with nominative case. In fact, we have not been able to find any aspect of the internal structure of the complement clause to which case marking might be attributed. But it would be incorrect to claim that case marking is random and need not be explained. Rather, a pattern quite similar to that in English is found. This is explicable if accusative case is attributed to SOR, but it is inexplicable in a nonraising framework because the internal case marking shows no correlation with any aspect of the internal structure of the complement clause.

We have shown, then, that the nonraising analysis, unlike the raising analysis, fails to provide a descriptively adequate account of the case marking of complement subjects in Quechua. We conclude that the raising analysis is to be preferred.

5. Argument Three: Nominative Case and Islandhood

We showed in the previous section that the nonraising analysis of (13) fails to provide an explanation for the distribution of complement subject case marking. In contrast, SOR provides an adequate account of these facts. We will now turn to islandhood. As was shown earlier in (14)-(16), nominative complement subjects are islands while accusative complement subjects in sentences like those of (14)-(16) are not. These facts appear, at first glance, to be amenable to explanation by NIC. We shall show, however, that this is not correct.

It will be recalled that according to NIC it is surface case marking which determines whether a noun phrase is an island. A noun phrase bearing nominative case is an island, but accusatives and obliques are not. It should be emphasized that the source of the case marking is irrelevant to the operation of the constraint.

We shall show in this section that in Quechua it is not case marking, but, rather derived constituency which determines whether a noun phrase is an island. There is a class of verbs the subjects of which receive accusative case. We shall show that these accusative subjects pattern with nominative subjects rather than with the accusative complement subjects in (14)-(16). This state of affairs is a direct counterexample to NIC, which predicts that the accusative subjects would not be islands.[8] But it is entirely predictable if the accusative complement subjects in (14)-(16) have undergone SOR, and, hence, are objects in derived structure, and if the Nominative Island Condition is replaced by a Subject Island Condition (SIC).[9]

There are two rather similar constructions in IQ in which the subject appears in accusative case. These constructions are illustrated in (29)-(30).

(29) -naya Desiderative Experiencers
Jose-ta puñu-naya-n
Jose-acc sleep-desiderative-3
'Jose wants to sleep/ Jose is sleepy.'

(30) Lexical Experiencers
Jose-ta rupa-n
Jose-acc be-hot-3
'Jose is hot.'

There are a variety of reasons to believe that the accusative noun phrases in (29)-(30) are subjects. These are discussed in some detail in an earlier work.[10] Even more important than the earlier arguments from the EST point of view is the fact that these accusative experiencers pattern with nominative subjects with regard to the Opacity Condition (successor in "On Binding" to the (Specified) Subject Condition), and complement subject islandhood. We shall discuss the opacity facts first.

We shall, at this point in the paper, limit our discussion of opacity and accusative experiencers to showing that within the framework of "On Binding" (as well as that of the earlier EST model), these accusative noun phrases must be analysed as subjects.

According to the Opacity Condition if α is in the domain of the subject of β (β minimal) (where β is NP or $\bar{S}$), then α cannot be free in β. That is to say, in effect, that an element c-commanded by a subject may not be related, by transformational or interpretive rules, to an element that is not also c-commanded by the subject.[11] What is significant here is that Opacity provides a diagnostic, within the "On Binding" framework, for determining whether a noun phrase is a subject. If the accusative experiencers of (33)-(34) cause other elements in their domain to be islands, the accusative experiencers must be subjects.

The sentences of (31) show that accusative experiencers do, in fact, cause Opacity.

(31) Opacity

a. Disjoint Reference with Desiderative Experiencer Subjects
Juan$_i$ cri-n Maria-ta pay-ta$_{i,j}$
Juan believe-3 Maria-acc he-acc
ricu-naya-j-ta
see-desiderative-pres Nom-acc
'Juan$_i$ believes that Maria wants to see him$_{i,j}$.'

b. Disjoint Reference with Lexical Experiencer Subjects
Juan$_i$ cri-n Maria-ta mana pay-ta$_{i,j}$ muna-j-ta
Juan believe-3 Maria-acc not he-acc want-pres Nom-acc
'Juan$_i$ believes that Maria doesn't want him$_{i,j}$.'

c. ri- Reflexivization with Desiderative Experiencer Subjects
*Juan$_i$ cri-n Maria-ta ricu-naya-ri$_{i,j}$-j-ta
Juan believe-3 Maria-acc see-desiderative-reflex-pres Nom-acc
('Juan believes that Maria wants to see himself.')

d. ri- Reflexivization with Lexical Experiencer Subjects
*Juan$_i$ cri-n Maria-ta mana muna-ri$_i$-j-ta
Juan^i believe-3 Maria-acc not want-reflex-pres Nom-acc
('Juan believes that Maria doesn't want himself.')
e. Reciprocal Interpretation with Desiderative Experiencer Subjects
*Juan-pash Jose-pash cri-n Maria-ta
Juan-also Jose-also believe-3 Maria-acc

ricu-naya-naju-j-ta
see-desiderative-reciprocal-pres Nom-acc
('Juan and Jose believe that Maria wants to see each other.')
f. Reciprocal Interpretation with Lexical Experiencer Subjects
*Juan-pash Jose-pash cri-n Maria-ta mana
Juan-also Jose-also believe-3 Maria-acc not

muna-naju-j-ta
want-reciprocal-pres Nom-acc
('Juan and Jose believe that Maria doesn't want each other.')

The examples of (31) show that accusative experiencers block disjoint reference, reflexivization and reciprocal formation with regard to nonsubject elements in the complement clause. This constitutes evidence within the EST framework that the accusative experiencers are subjects.

5.1 Disjoint Reference

We should like to turn now to evidence that accusative experiencers behave not merely like subjects, but like nominative subjects. As we saw, according to NIC, nominative noun phrases not only have the effect of preventing nonsubjects in their domain from undergoing various rules (Opacity), but they are also islands themselves (NIC). We shall now show that accusative experiencer subjects in Quechua are islands, just like nominative subjects. We shall first consider disjoint reference. Compare (32) and (33).

(32) Disjoint Reference Does Not Apply to Nominative Subject
Jose$_i$ cri-n pay$_{i,j}$ micu-ju-j-ta
Jose^i believe-3 he[nom] eat-prog-pres Nom-acc
'Jose$_i$ believes that he$_{i,j}$ is eating.'

(33) a. Disjoint Reference Does Not Apply to Desiderative Experiencer Subjects
Jose$_i$ cri-n pay-ta$_{i,j}$ micu-naya-j-ta
Jose^i believe-3 he-acc^{i,j} eat-desiderative-pres Nom-acc
'Jose$_i$ believes that he$_{i,j}$ wants to eat.'
b. Disjoint Reference Does Not Apply to Lexical Experiencer Subjects
Jose$_i$ cri-n pay-ta$_{i,j}$ rupa-j-ta
Jose^i believe-3 he-acc^{i,j} hot-pres Nom-acc
'Jose$_i$ believes that he$_{i,j}$ is hot.'

As predicted by NIC, disjoint reference cannot apply to the nominative complement subject in (32). Thus, the complement subject is interpretable as having either the same reference or a different reference from the matrix subject.

But NIC makes the wrong prediction with regard to (33). According to NIC, the pattern in (33) should be the same as that in (14a), repeated here as (34).

(34) Disjoint Reference

Jose$_i$ cri-n {*pay-ta$_i$ / pay-ta$_j$} cayna shamu-shca-ta

Jose believe-3 he-acc yesterday come-past Nom-acc

'Jose$_i$ believes him$_j$ to have come yesterday.'

Because the complement subject is accusative in (33), disjoint reference is free to apply, and the matrix and complement subjects are interpreted as noncoreferential. But in (33), disjoint reference mysteriously fails to apply, and despite the accusative case of the complement subject, the matrix and complement subjects may be interpreted as having either the same or different reference.

An additional fact for which NIC provides no explanation is the contrast in possible interpretations between (33) and (35).

(35) a. Disjoint Reference Applies with Desiderative Experiencer Subject which Precedes Matrix Verb

Jose-ca$_i$ {*pay-ta$_i$ / pay-ta$_j$} cri-n micu-naya-j-ta

Jose-topic he-acc believe-3 eat-desiderative-pres Nom-acc

'Jose$_i$ believes him$_j$ to want to eat.'

b. Disjoint Reference Applies with Lexical Experiencer Subject Which Precedes Matrix Verb

Jose-ca$_i$ {*pay-ta$_i$ / pay-ta$_j$} cri-n rupa-j-ta

Jose-topic he-acc believe-3 be-hot-pres Nom-acc

'Jose$_i$ believes him$_j$ to be hot.'

In (35), in contrast to (33), disjoint reference has applied. NIC offers no account of why the complement subject of (33) is an island but that of (35) is not.

The islandhood of accusative experiencer subjects suggests that, in Quechua at least, it is not nominative noun phrases that are islands, but rather subjects. The data would seem to show that the Nominative Island Condition should be replaced by a Subject Island Condition (SIC).[12] But, if this is correct, what is the explanation for the fact that payta in (34) is not an island? The raising hypothesis provides a ready answer: in derived structure, the underlying complement subject of (34) is no longer a subject. It is, as a result of SOR, the matrix direct object.

SIC plus SOR also provide an account of the contrast between (33) and (35). The sentences of (33) are structurally ambiguous between a raised and an unraised reading. In the unraised reading, the complement subject is an island. Hence, the matrix and complement subject may be interpreted as coreferential. In contrast, the sentences of (35) are structurally unambiguous: they have only the raised reading. Thus, payta is interpretable only as a direct object, and, therefore, not subject to SIC. As a result, only the disjoint reference reading is available.

5.2 Complementizer-Trace Phenomena

We have shown that the disjoint reference facts suggest that complement subject islandhood should be explained in terms of SIC and SOR, rather than NIC. We would like to turn now to another phenomenon, attributed recently to NIC in English, which appears to support a SIC-SOR analysis in Quechua.

There is a constraint in English, discussed extensively by Perlmutter (1971), Bresnan (1972), and, more recently by Chomsky and Lasnik (1977), against the extraction of a subject noun phrase when it immediately follows the complementizer that (t indicates the trace left by Wh-Movement):

(36) a. *Who did you say that t left?
b. Who did you say t left?
c. Who(m) did you say (that) he saw t?

The ungrammaticality of (36a) has been reanalysed within the "On Binding" model by Pesetsky (1978a and 1978b) as due to a NIC violation. Although there are a number of problems with Pesetsky's analysis,[13] we shall assume that it is correct at least in broad outline. We shall then show that a similar constraint on question formation in Quechua must be analysed in terms of SIC plus SOR rather than NIC.[14] In IQ a distribution similar to (36) is found:

(37) Wh-Question Formation in IQ
a. *Pi-taj Maria cri-n t aicha-ta
who[nom]-wh q Maria believe-3 meat-acc
micu-shca-ta?
eat-past Nom-acc
('Who does Maria think that ate meat?')
b. Ima-ta-taj Maria cri-n Jose t micu-shca-ta?
what-acc-wh q Maria believe-3 Jose eat-past Nom-acc
'What does Maria believe that Jose ate?

The pattern observed in (37) in Quechua is identical to that seen in (36a) and (36c) in English. We shall assume that the same phenomenon is involved in Quechua as in English.

Can the Quechua facts be explained by NIC? At first glance, it would appear that they can:[15] if the ungrammaticality of the sentences of (37a) is due to a NIC violation, similar sentences with the complement subject in accusative case should be well-formed. This prediction is correct:

(38) Wh-Question Formation with Accusative Complement Subject
Pi-ta-taj Maria cri-n t aicha-ta micu-shca-ta?
who-acc-wh q Maria believe-3 meat-acc eat-past Nom-acc
'Whom does Maria believe to have eaten meat?'

But, as in the case of disjoint reference, NIC fails to account for the islandhood of accusative experiencer subjects like those of (29) and (30). When embedded under a predicate that does not normally allow an

alternation between nominative and accusative case in the complement subject (those predicates which would be viewed as not governing SOR in the raising analysis), for example matrix predicate adjectives, Wh-Question formation is blocked despite the accusative case of the complement subject.

Example (39) shows that complement subjects other than accusative experiencers may not appear in accusative case when embedded beneath a matrix adjective:

(39) a. Complement Subject Cannot Be Accusative When Embedded Under A Matrix Adjective

Maria cushi cushi-mi paypaj tayta(-*ta)
Maria happy happy-valid her father(-acc)

visita-chun
visit-subjunc Nom
'Maria is very happy that her father will visit.'

b. Accusative Desiderative Experiencer Complement Subject Embedded Under a Matrix Adjective

Maria cushi cushi-mi paypaj wawa-ta
Maria happy happy-valid her child-acc

micu-naya-chun
eat-desiderative-subjunc Nom
'Maria is happy that her child wants to eat.'

c. Accusative Lexical Experiencer Complement Subject Embedded Under a Matrix Adjective

Maria mana cushi-chu paypaj wawa-ta rupa-chun
Maria not happy-neg her child-acc burn-subjunc Nom
'Maria is not happy that her child is hot.'

NIC would predict the nominative complement subject of (39a) to be an island with respect to Wh-Question extraction, and this is correct:

(40) Nominative Complement Subject Cannot Be Extracted by Wh-Movement

*Pi-taj Maria cushi chushi t visita-chun?
who-wh q Maria happy happy visit-subjunc Nom
('Who is Maria very ahppy that will visit?')

But NIC would fail to predict that accusative experiencer subjects are islands as well:

(41) a. Accusative Desiderative Experiencer Cannot Be Extracted by Wh-Movement

*Pi-ta-taj Maria cushi cushi t micu-naya-chun?
who-acc-wh q Maria happy happy eat-desid-subjunc Nom
('Whom is Maria happy that wants to eat?')

b. Accusative Lexical Experiencer Subject Cannot Be Extracted By Wh-Movement

*Pi-ta-taj Maria mana cushi-chu t rupa-chun?
who-acc-wh q Maria not happy-neg burn-subjunctive Nom
('Who is Maria not happy that is hot?')

The islandhood of examples like (41) is given no explanation by NIC. But the SIC plus SOR analysis provides an immediate explanation for the full range of data. Sentences like (41) are ungrammatical, as is (40), because the questioned element is a complement subject. It is subjecthood rather than case which is relevant. Questions like (38) are grammatical because the questioned element, the underlying complement subject, has undergone SOR, and, at the time extraction takes place, is an object rather than a subject. We conclude, therefore, that the interaction of case marking and complement subject islandhood supports an analysis in terms of Subject Islandhood Condition and Subject to Object Raising rather than the Nominative Island Condition.

5.3 Validator Placement

Our final argument for SOR is based on a constraint on validator placement. The Quechua languages make frequent use of a series of morphemes often referred to as enclitics or validators. The validators indicate the evidential status of the sentence: first hand knowledge, hearsay, etc. The number and meaning of the validators varies from language to language. Those found in Imbabura are shown in (42).

(42) Validators in IQ
-ma(ri) 'emphatically asserted', -mi 'first hand knowledge', -shi 'hear-say',[16] -cha(ri) 'doubtful information', -chu 'negation, yes-no question'

In general, the placement of validators is free.[17] There is, however, an important restriction on their placement which is illustrated in (43).

(43) Validator Placement in IQ

a. Juan-mi cri-n Maria Jose-ta ricu-shca-ta
Juan-valid believe-3 Maria Jose-acc see-past Nom-acc
'It is Juan who believes that Maria saw Jose.'

b. Juan cri-n-mi Maria Jose-ta ricu-shca-ta
Juan believe-3-valid Maria Jose-acc see-past Nom-acc
'Juan believes [e.g., but doesn't know] that Maria saw Jose.'

c. *Juan cri-n Maria-mi Jose-ta ricu-shca-ta
Juan believe-3 Maria-valid Jose-acc see-past Nom-acc
('It's Maria who Juan believes saw Jose.')

d. *Juan cri-n Maria Jose-ta-mi ricu-shca-ta
Juan believe-3 Maria Jose-acc-valid see-past Nom-acc
('It's Jose who Juan believes Maria saw.')

e. *Juan cri-n Maria ricu-shca-mi Jose-ta
Juan believe-3 Maria see-past Nom-valid Jose-acc
('Juan believes that Maria saw [e.g., not heard] Jose.')

As is shown in (43), the validator -mi 'first hand information' may not appear on constituents of the complement clause including nominative complement subjects. It may, however, be suffixed to accusative underlying subjects like that in (44).

(44) Accusative Underlying Complement Subjects Can Be Validated
a. Maria-ca Francisco-ta-mi yachan wasi-man
Maria-topic Francisco-acc-valid knows house-to

shamu-shca-ta
come-past Nom-acc
'It is Francisco whom Maria knows to have come home.'
b. Maria yachan Francisco-ta-mi wasi-man
Maria knows Francisco-acc-valid house-to

shamu-shca-ta
come-past Nom-acc
'It is Francisco whom Maria knows to have come home.'

The facts given so far are compatible with both the raising and the NIC analyses.

But the NIC analysis provides no explanation for the fact that the accusative experiencers in (45) cannot be validated.

(45) a. -naya Desiderative Experiencer Subjects
*Maria cushi cushi paypaj wawa-ta-mi
Maria happy happy her child-acc-valid

micu-naya-chun
eat-desid-subjunc Nom
('Maria is very happy that her child [e.g., not her husband] wants to eat.')
b. Lexical Experiencer Subjects
*Maria cushi cushi Jose-ta-mi wasi-man shamu-ngapaj
Maria happy happy Jose-acc-valid house-to come-subjunc Nom

muna-chun
want-subjunc Nom
('Maria is very happy that Jose [e.g., not Francisco] wants to come home.')

This state of affairs is predictable on the basis of the raising analysis. The accusative experiencers in (45) are embedded beneath a matrix adjective (cushi 'happy') and, thus, cannot be raised into the matrix clause. This explains their islandhood. In contrast, the matrix predicate in (44) is a raising trigger (yacha- 'know'). The underlying complement subject has been raised into the matrix clause, which explains the possibility of validation.

6. Crosslinguistic Implications

In the previous sections we have presented a variety of arguments for a raising analysis of sentences like (13b) in IQ. We believe that these arguments are quite persuasive, and will hereafter assume the correctness of the raising analysis for IQ. We would like to turn now to a consideration of the implications of these results.

The first question we would like to consider is whether the analysis proposed above is only of interest for Quechua, or whether it has implications for languages like English as well. It will be remembered that for English both the raising and the nonraising analyses adequately account for the syntactic properties of the construction (the islandhood and nominative case of the underlying complement subject in (2) versus the accusative case and nonislandhood of the underlying complement subject in (1)). The two analyses, however, make quite different claims with regard to the source of these syntactic properties. In the "On Binding" version of the nonraising analysis they are attributed to aspects of the internal structure of the complement clause, and islandhood as due to nominative case. In contrast, the raising analysis attributes both surface case marking and islandhood properties to derived constituent structure.

The two analyses, therefore, make very different predictions about case marking and islandhood in languages that differ from English in certain crucial ways. The nonraising analysis proposed in "On Binding" claims that crosslinguistically a contrast in the surface case marking of the underlying complement subject like the accusative-nominative contrast seen in (1) and (2) will correlate with the finiteness of the complement clause. The raising analysis claims that this contrast will correlate with the derived constituency of the underlying complement subject. Similarly, in the "On Binding" analysis, islandhood is predicted to correlate with nominative case. In the raising analysis, islandhood is predicted to correlate with derived constituency rather than case.

Thus, the two analyses make falsifiable predictions about islandhood and complement subject case marking crosslinguistically. The importance of the IQ data is that it constitutes a straightforward test for the two analyses. As we showed above, the correlations predicted by the raising analysis are borne out in IQ, but those predicted by the nonraising analysis are not. We conclude that raising appears to be the proper explanation in any language (including English) in which a pattern of islandhood and case marking like that seen in (1)-(6) is found.

7. Some Problems with SIC

In the analysis of IQ complementation, we showed that it would be necessary to revise the Nominative Island Condition. A Subject Island Condition was proposed in its place as a minimal modification of the "On Binding" framework. We would like to explore here the adequacy of the resulting system and to compare it with a Standard Theory analysis of complementation like that proposed by Postal (1974). We shall argue that an analysis with SIC is plagued with serious internal contradictions and should be abandoned.

The first point that we would like to make is that the substitution of SIC for NIC results in a system that appears to be quite similar to clause boundedness. The combined effect of SIC and Opacity is that all positions within a clause are islands. This is equivalent to claiming that rules are clause bounded.

There are, however, serious emperical differences between an SIC-Opacity analysis and one involving clause boundedness. These differences have to do with the issue of which rules will be prevented from applying

into embedded clauses. In a clause boundedness analysis, like that proposed in Postal (1974), rules are categorized into three types, only one of which is clause bounded. The three types of rules are unbounded rules (Wh-Movement, etc.), biclausal rules (SOR, SSR, Equi-NP Deletion, etc.) and clause internal rules (Passive, Reflexivization, etc.). (It should be noted that a number of rules that would be analysed as rules of construal or control in EST are included in the transformational component in such an analysis, e.g., Reflexivization and Equi-NP Deletion.) Thus, both unbounded and biclausal rules may operate across clause boundaries. In contrast, according to SIC-Opacity, Wh-Movement is the only rule which can relate an element in a subordinate clause with one in a matrix clause.

Although the SIC-Opacity analysis correctly predicts the possibility of Wh-Movement across clause boundaries, given the usual assumptions about trace theory, it incorrectly predicts that biclausal rules will be blocked. This may be illustrated by SOR in IQ. Under the assumption that raising rules leave traces, the logical form of (13b) (repeated as (46a)) is roughly (46b).

(46) a. Maria-ca Francisco-ta cri-n cay-pi
Maria-topic Francisco-acc believe-3 this-in

ca-j-ta
be-pres Nom-acc
'Maria believes Francisco to be here.'

b. [Maria-ca Francisco-ta cri-n $\bar{S}$[$_S$[t cay-pi ca-j-ta]]]

Note that the trace left by SOR in the complement S is not bound in the complement $\bar{S}$. Thus, (46a) constitutes a counter example to SIC, though not to clause boundedness.

It should be noted, furthermore, that SOR is not the only rule that SIC would appear to block. SIC would also prevent the application of SSR in sentences like (47), presumably derived from sources like (48).

(47) [can-ca ricu-ri-ngui $\bar{S}$[$_S$[t aicha-ta micu-ju-j]]]
you-topic see-reflex-2 meat-acc eat-prog-pres Nom
'You seem to be eating meat.'

(48) [ricu-ri-n $\bar{S}$[$_S$[can-ca aicha-ta micu-ju-j]]]
see-reflex-3 you-topic meat-acc eat-prot-pres Nom
'It seems that you are eating meat.'

Note that in (47) the trace left by SSR is unbound in the complement clause. This is an apparent counter example to SIC, though not to the rule typology proposed by Postal.

Not only does SIC predict the impossibility of SOR and SSR, it also predicts the ungrammaticality of so-called "Equi" sentences like (49). But these sentences are well-formed.

(49) Wawa-ca muna-n lichi-ta ufya-na-ta
child-topic want-3 milk-acc drink-future Nom-acc
'The child wants to drink milk.'

Sentences like (49) are generally presumed in EST to be derived from a structure like (50).

(50) wawa-ca muna-n $\bar{S}$[$_S$[pro[18] lichi-ta ufya-na-ta]]
child-topic want-3 milk-acc drink-future Nom-acc

A rule of construal marks pro as obligatorily coreferential with the matrix subject.

What is relevant here is that pro is a subject anaphor that is unbound in $\bar{S}$. Thus, sentences like (52) violate SIC, just as do sentences like (46a) and (47).

8. Can the Conditions on Binding Be Saved?

We showed in the previous section that, given the assumptions that all movement rules leave traces and that "Equi" sentences derive from a structure similar to (50), SIC makes incorrect predictions regarding the grammaticality of biclausal rules. In contrast, Postal's rule typology based on clause boundedness makes correct claims about all three types of rules. It is, however, important to note that Postal's typology is simply a taxonomy of syntactic rules. The taxonomy shows which kind of rules operate into subordinate clauses. But it provides no explanation for why certain kinds of rules are clause bounded and others are not. No principle predicts that rules like Wh-Movement would be unbounded while those like Passive would not.

In contrast, SIC makes principled predictions with regard to which rules are clause bounded. The difficulty is that these predictions are wrong with regard to biclausal rules. Is there any way to modify the overall system so that biclausal rules will not be blocked? If there were, it would be possible not only to provide a typology of rule application, as Postal did, but also to explain why different kinds of rules behave differently with respect to clause boundaries.

One possibility that suggests itself is that raising rules do not leave traces. This is a position which has in fact been proposed (Jacobson, to appear). If raising rules did not leave traces, the output of raising in IQ would be similar to (51).

(51) a. Output of SOR in IQ
[Maria-ca Francisco-ta cri-n $\bar{S}$[$_S$[cay-pi
Maria-topic Francisco-acc believe-3 this-in
ca-j-ta]]]
be-pres Nom-acc
'Maria believes that Francisco is here.'
b. Output of SSR in IQ
[can-ca ricu-ri-ngui $\bar{S}$[$_S$[aicha-ta micu-ju-j]]]
you-topic see-reflex-2 meat-acc eat-prog-pres Nom
'You seem to be eating meat.'

The structures of (51) differ from (46b) and (47) in that they lack a trace of the raised subject in the complement clause. As a result, they do not violate SIC.

A similar solution might be proposed for "Equi" sentences like (49). If (49) were derived by cyclical, coreferential complement subject deletion, rather than from (50), the derived structure would be (52), which does not violate SIC.

(52) wawa-ca muna-n $\bar{S}$[S[lichi-ta ufya-na-ta]]
child-topic want-3 milk-acc drink-future Nom-acc
'The child wants to drink milk.'

These proposals have the merit of limiting the effects of SIC to clause internal rules. But there are objections to these proposals that render them unacceptable. The first has to do with semantic interpretation. One function of both trace and pro is that they record in surface structure deep structure thematic relations. If, in the output of Raising and Equi, there is no surface element corresponding to the deep structure complement subject, it would not be possible to apply rules of semantic interpretation to surface structure. Rather, such rules would have to make reference to both deep and surface structure.

The second, and even more serious, objection has to do with Opacity. It will be remembered that, according to the Opacity Condition, an anaphor in the domain of a subject may not be free in $\bar{S}$. This blocks, for example, the application of disjoint reference into a complement clause:

(53) Jose$_i$ yacha-n $\bar{S}$[Maria Otavalo-pi pay-ta$_{i,j}$ ricu-shca-ta]
Jose know-3 Maria Otavalo-in he-acc see-past Nom-acc
'Jose$_i$ knows that Maria saw him$_{i,j}$ in Otavalo.'

Consider the implications for Opacity of the proposal that the output of Raising and Equi is similar to (51) and (52). Since there is no subject in (51) and (52) in Logical Form, Opacity would not apply. This predicts that in sentences where Raising or Equi have applied, Reflexivization and similar rules could interpret the object-reflexive element in the complement clause as coreferential with any of the NP's outside the complement clause. But sentence (54) shows that this prediction is false:

(54) Maria-ca Jose-ta muna-n $\bar{S}$[espejo-pi ricu-ri-chun]
Maria-topic Jose-acc want-3 mirror-in see-reflex-subj. Nom
'Maria wants Jose to see himself in the mirror.'

Sentence (54) can only be interpreted to mean that Maria wants Jose to see himself in the mirror, not that she wants him to see her. These facts suggest raising rules cannot be analysed as failing to leave traces if the possible interpretations of (54) are to be explained by Opacity. Similar facts hold for "Equi" sentences, as is seen in (55).

(55) Maria Jose-ta cacha-rca $\overline{S}$[espejo-pi ricu-ri-chun]
Maria Jose-acc send-past 3 mirror-in see-reflex-subj. Nom
'Maria sent Jose to see himself in the mirror.'

In (55) the only interpretation is that Maria sent Jose to see himself in the mirror, not that she sent him to see her. Thus, we conclude that the proposed solutions to the problems raised at the beginning of this section must be rejected.[20]

9. Conclusions

We have shown in this paper that IQ presents severe, perhaps insurmountable, problems for a theory of syntax in which island violations are attributed to conditions on binding like NIC and Opacity. The structure of our argument has been as follows:

IQ displays islandhood facts analogous to those found in English. A variety of facts peculiar to IQ show that the explanation for islandhood proposed in "On Binding"--NIC and Opacity--cannot be extended crosslinguistically. It is necessary to modify NIC to SIC. But SIC and Opacity make incorrect predictions with respect to Raising and "Equi" structures. There does not appear to be any non ad hoc way to modify the system so as to make it descriptively adequate. We, thus, conclude that conditions like NIC and Opacity should be rejected in favor of an analysis which includes both subject to object raising and clause boundedness.

NOTES

*We would like to thank Polly Jacobson, Chuck Kisseberth, Peter Landerman, Jerry Morgan, Henry Thompson and David Weber for their helpful comments on earlier versions of this paper. This research was supported in part by grants from the National Science Foundation (grant number BNS 77-27159) and the Research Board of the University of Illinois.

[1]In the sections which follow we show that a raising analysis for IQ is necessary even within the EST framework. In such an analysis, it is not immediately obvious that rules like those in (3)-(6) must be clause bounded. An alternative to clause boundedness which we consider is a condition rather analogous to the Nominative Island Condition (Chomsky 1978) which has the effect of making complement subjects islands with respect to rules like those in (3)-(6). See section 3 and following sections for further discussion of alternatives to clause boundedness.

[2]As in earlier versions of EST, Comp to Comp Wh-Movement is not affected. NIC fails to block movement from Comp to Comp because the nominative trace left in S by Wh-Movement is bound by the trace left in Comp. Chomsky's case marking rule is written in such a way as to prevent the trace in Comp from receiving nominative case. Thus, Wh-Movement does not cause an NIC violation.

[3]This paper is part of an ongoing study of the structure of IQ and other Quechua languages. This paper is largely based on information provided by Carmen Chuquin, a native speaker of IQ, whose generous assistance is gratefully acknowledged. IQ is a dialect of Highland Ecuadorian Quechua, a member of the northern group of Quechua A languages (Parker 1969). IQ has 40,000 to 60,000 speakers in the Province of Imbabura, Ecuador. For further information on IQ, see Stark (1973), Cole, Harbert and Hermon (1978), Cole and Jake (1978) and Cole (to appear).

[4]See section 4 for details.

[5]For a number of rules, there is no way to determine whether the rule has applied to a nominative or an accusative noun phrase. This is because the effect of the rule is to eliminate the evidence for the previous case marking of the noun phrase.

One class of cases involves incorporation into the verb. For example, in -ri reflexivization (though not in -llataj reflexivization) and reciprocal formation a reflexive (-ri) or reciprocal morpheme (-naju) is added to the verb, as in (i)-(ii):

(i) -ri Reflexivization
Wawa-ca ricu-ri-rca espejo-pi
child-topic see-reflex-past 3 mirror-in
'The child saw himself in the mirror.'

(ii) Reciprocal Formation
Wambracuna maca-naju-rca
boys hit-reciprocal-past 3
'The boys hit each other.'

When the reflexive or reciprocal morpheme refers to a complement subject, there is no way to tell whether the subject is nominative or accusative:

(iii) Reflexivized Complement Subject
ñuca yacha-ri-rca Quito-pi ca-j-ta
I know-reflex-past 3 Quito-in be-pres Nom-acc
'I know myself to be in Quito.'

(iv) Reciprocal Complement Subject
Wambracuna cri-naju-rca Quito-pi ca-j-ta
boys believe-recip-past 3 Quito-in be-pres Nom-acc
'The boys believed each other to be in Quito.'

Note that there is nothing about the structure of the complement clause (e.g., finite versus nonfinite verb form) which might let us know whether the complement subject was nominative or accusative. This aspect of Quechua is discussed in some detail below.

What is important to note is that for all rules that do not obscure the nominative-accusative distinction, the nominatives are islands while the accusatives are not. Hence, there is no evidence whatsoever that Quechua does not manifest the same islandhood constraints found in English.

(For discussion of whether these constraints are due to nominative case, as Chomsky (1978) has claimed, or to some other principle such as subjecthood, see below.)

[6]These base rules, of course, also allow structures in which the object NP in (27) has undergone lexical insertion.

[7]We shall show in the next section that the nonraising analysis cannot in fact account for the islandhood facts.

[8]The structure of the grammar in the "On Binding" model makes it impossible to save the NIC analysis by rule ordering. According to such a proposal the relevant surface accusative NPs would be nominative at the point when NIC applies, and would be changed to accusative at a later stage in the derivation. This, however, cannot be correct because NIC applies to Logical Form, which is determined by surface structure. Thus, any rule applying prior to surface structure would affect the input to NIC.

[9]Or, by clause boundedness.

[10]See Cole and Jake (1978).

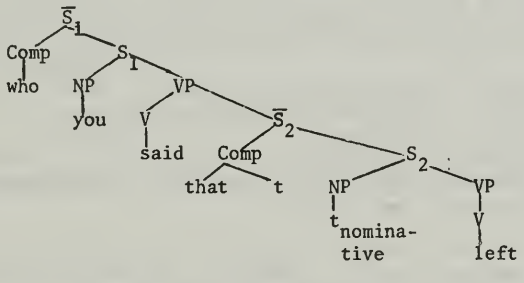
[11]Except if it is so related by movement through Comp. The trace left by a movement rule in Comp provides an antecedent for the trace left in the complement clause within the domain of a subject. Thus, the trace left in the domain of the subject is not free in $\overline{S}$.

[12]This condition would mimic Chomsky's NIC:
A subject anaphor in S cannot be free in $\overline{S}$ containing S.

[13]Pesetsky's analysis appears to make incorrect predictions with regard to the Opacity Condition.

[14]The mechanics of Pesetsky's analysis are as follows:
He assumes that the grammar of English (and other languages) contains a filter against the appearance of two elements in Comp. When a complement subject is extracted, a structure along the lines of (i) results:

(i)



Note that the Comp of $\overline{S}_2$ contains two elements, that and t, where t is the trace left by who in the Comp of $\overline{S}_2$.

One of these two elements must be deleted if the filter is not to be violated. If that is deleted, a grammatical sentence results, but, if the trace is deleted, the nominative trace in S_2 is free in $\overline{S}_2$, a violation of NIC. The upshot of this is that that must be deleted or a NIC violation will result.

[15]This requires the assumption that Quechua clauses contain a covert complementizer since no overt complementizer appears on the surface. Furthermore, the abstract complementizer would have to be undeletable. No sentence equivalent to (36b) is possible in Quechua.

For a somewhat different although compatible analysis of Quechua structure at the $\overline{S}$ level, see Lefebvre and Muyskin (1978), who posit a variety of Comp-like elements under $\overline{S}$.

[16]IQ speakers frequently substitute nin 'says' for the validator -shi.

[17]The placement appears to be determined by discourse factors.

[18]It is irrelevant whether the complement subject in (50) is pro as in Chomsky (1973) or pro self as in Chomsky and Lasnik (1977). What is important is that the complement subject is a subject anaphor and is unbound in $\overline{S}$ in Logical Form.

[19]Such deletions, presumably, would not leave traces.

[20]It might be thought that a way around these problems would be to combine SIC and Opacity into a single condition.

(i) The Clausal Island Condition (CIC)
An anaphor in S cannot be free in $\overline{S}$ containing S.

According to CIC all clauses are islands. CIC would apply regardless of whether a subject is present. Thus, it would predict that reflexivization rules could not apply into the complement clause in (54) and (55).

But, assuming that Equi is a cyclic deletion rule, and that such rules do not leave traces, CIC would make incorrect predictions with respect to "Equi" sentences like (ii):

(ii) Maria muna-n $\overline{S}$[espejo-pi ricu-ri-na-ta]
Maria want-3 mirror-in see-reflex-subjunc Nom
'Maria wants to see herself.'

CIC would block (ii) because -ri- is not bound in $\overline{S}$. Similar problems exist for raising sentences like (iii).

(iii) Maria Jose-ta muna-n $\overline{S}$[espejo-pi ricu-ri-chun]
Maria Jose-acc want-3 mirror-in see-reflex-subjunc Nom
'Maria wants Jose to see himself in the mirror.'

Thus, CIC does not constitute a solution to these difficulties.

REFERENCES

BACH, Emmon. 1977. Review of P. M. Postal, on raising: one rule of English grammar and its theoretical implications. Language 53, no. 3, pp. 621-54.

BRESNAN, Joan W. 1972. Theory of complementation in English syntax. Unpublished doctoral dissertation, MIT.

_____. 1976. Nonarguments for raising. Linguistic Inquiry 7, no. 3, pp. 485-502.

GEORGE, Leland and Jaklin Kornfilt. 1978. Finiteness and boundedness in Turkish. Presented at the Third Generative Linguists of the Old World Conference, Amsterdam.

GREENBERG, J. H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In J. H. Greenberg, ed.: Universals of language, pp. 73-113. MIT Press.

CHOMSKY, Noam. 1973. Conditions on transformations. In Anderson and Kiparsky, eds.: Festschrift for Morris Halle, pp. 232-86. Holt, Rinehart and Winston, Ind.

_____. 1977. On Wh-movement. In Culicover, Wasow and Akmajian, eds.: Formal syntax, pp. 71-132. Academic Press.

_____. 1978. On binding. Manuscript.

CHOMSKY, Noam and Howard Lasnik. 1977. Filters and control. Linguistic Inquiry 8, no. 3, pp. 425-504.

COLE, P., W. Harbert and G. Hermon. 1978. Headless relative clauses: evidence from Quechua. Studies in the Linguistic Sciences 8, no. 1, pp. 26-41.

COLE, P. and J. Jake. 1978. Accusative subjects in Imbabura Quechua. Studies in the Linguistic Sciences 8, no. 1, pp. 72-96.

LEFEBVRE, Claire and Peter Muysken. 1978. Comp in Cuzco Quechua. Presented at the Ninth Annual Meeting of the North Eastern Linguistic Society, and to be published in Cuny Forum 5/6.

PARKER, Gary J. 1963. Comparative Quechua phonology and grammar I: classification. University of Hawaii Working Papers in Linguistics 1, no. 1, pp. 65-88.

PERLMUTTER, David. 1972. Deep and surface structure constraints in syntax. Holt, Rinehart and Winston, Inc.

PESETSKY, David. 1978a. Complement trace phenomena and the nominative island condition. Presented at the Ninth Annual Meeting of the North Eastern Linguistic Society, and to be published in Cuny Forum 5/6.

_____. 1978b. Complement trace phenomena and the nominative island condition. Unpublished MIT syntax generals paper. (An extended version of 1978a).

POSTAL, P. M. 1974. On raising. Cambridge, Mass.: MIT Press.

_____. 1977. About a nonargument for raising. Linguistic Inquiry 8, no. 1, pp. 141-54.

STARK, L and L. K. Carpenter. 1973. El Quichua de Imbabura: Una gramatica pedogagica. Instituto Interandino de Desarrollo, Otavalo, Ecuador.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

The Inclusion Constraint: Description and Explanation*

Richard D. Cureton

This paper provides an in-depth examination of one of the syntactic phenomena Paul Postal uses as evidence for Raising, the Inclusion Constraint, in an attempt to gain a fuller understanding of the phenomenon itself--independent of its use as an argument for Raising. The paper: (1) presents and tests Postal's claims (2) provides a workable alternative to Postal's constraint and (3) motivates why a curious phenomenon such as the Inclusion Constraint exists. In the first section of the paper, it is demonstrated that Postal's blanket clause mate restriction on NP's with overlapping coreference is much too strong and must be rejected. In the second section, it is argued that the Inclusion Constraint is a lexically-governed constraint on overlapping coreference operating between the subject and direct object of certain predicates. A four-class typology of verbs is presented which relates the Inclusion Constraint to similar subject-direct object constraints on coreference. Finally, it is argued that the Inclusion Constraint is an instance of a more general pragmatic constraint which forbids the use of a predicate in constructions which force a speaker to simultaneously entertain two sets of conflicting assumptions about the situation represented by the sentence in which the predicate appears. The paper (a) illustrates the nature of constructions with overlapping coreference which bring about this situation and (b) provides a syntactic test which supports this analysis by demonstrating that another syntactic process is sensitive to the same pragmatic situation.

I. Postal's Claims

In On Raising, Postal (1974:77) states:

> In Postal (1966a), I noted and designated restrictions like the following as the "Inclusion Constraint."
>
> (45) a. *I like us.
>
> b. *We like me.
>
> c. *He praised them .
> i (i,j)
>
> d. *They criticized him .
> (i,j) i
>
> That is, certain NP's are not permitted to overlap in stipulated coreference.

In a following footnote, Postal (1974:78) makes his claim explicit:

> My claim is that the restriction is a filter which marks derivations as ill-formed if, at the end of any cycle, they are Clause Mates that overlap in coreference (subject to certain further conditions).

While Postal goes on to elaborate and refine this claim, he does not significantly deviate from this postion.[1] Consequently, it is the content of these statements which I would like to examine.

As one quickly discovers, Postal's clause mate condition is highly vulnerable. While examples which represent subject and direct object NP's in overlapping coreference (such as Postal's examples) often produce Inclusion Constraint violations, in many other constructions, the clause mate constraint does not hold. For instance, all sentences with benefactive prepositional phrases of the form: I-main verb-NP-for us are acceptable. Sentences such as (1a)-(1o):

(1) a. I cook a good dinner for us every night.

b. I bought a new T.V. for us.

c. I chilled some champagne for us.

d. I earn a good living for us.

e. I filched some money for us.

f. I drilled some holes for us.

g. I make a grocery list for us every day.

h. I poured some milk for us.

i. I ruined the day for us.

j. I'll set the table for us.

k. I hailed a cab for us.

l. I'll wipe off the window for us.

m. I took some notes for us.

n. I caught some fish for us.

o. I took out the garbage for us.

are all perfectly grammatical, even though sentences such as (2a)-(2d):

(2) a. *I cook a good dinner for me every night.

b. *I bought a new T.V. for me.

c. *I chilled some champagne for me.

d. *I earn a good living for me.

and so forth, are ungrammatical. These constructions demand the reflexive (as in (3a)-(3d)):

(3) a. I cook a good dinner for myself every night.

b. I bought a new T.V. for myself.

c. I chilled some champagne for myself.

d. I earn a good living for myself.

and, therefore, the NP's which overlap in coreference appear to be clause mates. Needless to say, (1a)-(1o) are serious counter-examples to Postal's claims.

While (1a)-(1o) demonstrate the inadequacy of Postal's claims, one might object that (in On Raising) Postal was concerned primarily with direct objects, and, therefore, he would lose little if he had to limit his claims to something like:

Claim B: Two NP's, a and b where a is the subject and b is the direct object of the same simplex cannot overlap in stipulated coreference.

Since the benefactive sentences ((1a)-(1o)) all involve indirect objects, this appears to be a legitimate reformulation. Sentences such as (4a)-(4o), however, show that Claim B is just as vulnerable as Postal's original claim.

(4) a. I starved us.

b. I poisoned us.

c. I paddled us across the lake.

d. I chained us to the cell door.

e. I covered us with a blanket.

f. I bandaged us up.

g. I dried us off.

h. I embarrassed us in front of the president.

i. I equipped us for the journey.

j. I drove us to Chicago for the weekend.

k. I jinxed us by breaking the mirror.

l. I stopped us.

m. I locked us out of the house.

n. I righted us by leaning on one gunwale.

o. I freed us from his domination.

These examples show that counter-examples to Postal's clause mate condition are not limited to indirect object constructions but extend to the very structures Postal claims that the Inclusion Constraint can provide a diagnostic for (i.e., direct objects). In the light of these facts, I believe that both the formulation of the Inclusion Constraint as a blanket clause mate constraint and the use of the constraint (in this form) as a diagnostic for a direct object must be abandoned.

However, the pertinent questions with regard to the correct formulation of the Inclusion Constraint still remain. When are NP's which overlap in stipulated coreference in the same simplex forbidden and when are they allowed? What constraints are needed to handle both Postal's data and the counter-examples presented above?

II. Toward a Description

In an attempt to answer these questions, consider the following classes of verbs:

Normal	Inclusion Constraint	Non-Reflexive	Reflexive
bandage	ask	encourage	behave?[2]
cover	teach	urge	
chain	convince	bid	
dry	help	assist	
embarrass	force	advise	
equip	forbid	prompt	
drive	reproach	entice	
free	fool	influence	
fatten	forget	offend	
jinx	interrupt	.	
right	throw	.	
lock	acquaint	.	
starve	love		
poison	hate		
.	.		
.	.		
.	.		

Normal verbs form a paradigm represented in (5a) and (5b):

(5) a. I covered { him / them / myself / us } with a blanket.

him
them
b. I poisoned myself with the bad meat.
us

Inclusion Constraint verbs form a paradigm represented in (6a) and (6b):

him
them
(6) a. I convinced myself to leave
*us

him
them
b. I taught myself to swim.
*us

Non-reflexive verbs form a paradigm represented in (7a) and (7b):

him
them
(7) a. I encouraged *myself to go.
*us

him
them
b. I commanded *myself to go.
*us

Reflexive verbs form a paradigm represented in (8a):

*him
*them
(8) a. I behaved myself.
*us

Graphically, the situation is as follows:

Verb class	I-MV-them/him	I-MV-myself	I-MV-us
Normal	yes	yes	yes
Inclusion Constraint	yes	yes	no
Non-Reflexive	yes	no	no
Reflexive	no	yes	no

Normal verbs, then, have no constraints on coreference between their subject and direct object. Inclusion Constraint verbs are subject to the Inclusion Constraint. Non-Reflexive verbs demand that their subject and direct object be referentially distinct, and Reflexive verbs demand referential indentity between their subject and direct object.[3]

From the data and paradigms presented above, the following conclusions can be drawn:

(1) The Inclusion Constraint is not a clause mate constraint.[4]

Where the Inclusion Constraint operates at all, it forbids the subject and direct object of certain predicates to overlap in coreference.

(2) The Inclusion Constraint is lexically-governed. Verbs such as teach, convince, ask, force, and so forth (i.e., Inclusion Constraint verbs in the paradigm above) produce Inclusion Constraint violations. Verbs such as bandage, cover, chain, equip, embarrass, and so forth (i.e., Normal verbs in the paradigm above) do not.

(3) The Inclusion Constraint, as a constraint on coreference between the subject and direct object of certain predicates, is not an isolated phenomenon. As the paradigm above illustrates, some verbs (such as behave) are mandatorily reflexive.5 Others (such as urge, advise, influence, offend, etc.) are mandatorily non-reflexive. Inclusion Constraint verbs, on the other hand, cannot be used reflexively and non-reflexively in the same proposition.

In sum, we can infer so far that the Inclusion Constraint is a lexically-governed constraint on overlapping coreference between the subject and direct object of certain predicates (i.e., Inclusion Constraint verbs) which, in turn, are associated with other predicates containing subject-direct object coreference constraints.

The preceding discussion has arrived at a more adequate description of the Inclusion Constraint. The problem now is: Why do Inclusion Constraint verbs exhibit this behaviour? What do Inclusion Constraint verbs have in common with each other? How do they differ from Normal verbs?

III. Toward an Explanation

In Section II. (above), it was shown that the set of Inclusion Constraint verbs can be related formally to other sets of verbs which demand referential identity (i.e., Reflexive verbs) or referential distinctness (i.e., Non-Reflexive verbs) between their subject and direct object. Consequently, as a natural preliminary step in our attempt to motivate Inclusion Constraint violations, we might ask: Why are sentences with Non-Reflexive verbs ungrammatical/unacceptable when the subject and object of the sentence are coreferential, and why are sentences with Reflexive verbs ungrammatical/unacceptable when they are not?

Clearly, the problems with Non-Reflexive and Reflexive verbs are related to the problems of Deep Structure Constraints discussed in Perlmutter (1971). In his monograph, Perlmutter points out that Chomsky's suggestion that transformational rules be used to filter out ill-formed deep structures that satisfy categorical and selectional restrictions is inadequate in some cases. Perlmutter demonstrates that certain coreference constraints between the subject of a matrix sentence and the subject of an embedded sentence involving verbs such as scream are independent of the transformational rule structure and must be formulated at the deep structure level. However, while

Perlmutter's demonstration that a formal mechanism such as Deep Structure Constraints is necessary within a Chomskian framework is well-taken, the deeper question (and the question more relevant to our purposes here) is: Why do verbs such as scream demand this constraint?

Intuitively, a sentence such as *I screamed for myself to go is unacceptable because it is simply pragmatically odd. If it were true (in some hypothetical world) that screaming at oneself could affect (in some mysterious way) one's going, this construction would be fine. That is, sentences such as I screamed for him to go are well-formed because, in the normal case, my screaming can affect his going. As we usually experience it, however, screaming is somewhat irrelevant to self-motivation. It just so happens that the world is constructed such that if a person cannot perform an action without screaming at himself, he can probably not perform it even if he does scream.

It seems that the problems with Non-Reflexive and Reflexive verbs are of a similar pragmatic nature. With respect to Non-Reflexive verbs, sentences such as: *I bid/encouraged/enticed/offended/assisted myself are unacceptable (in the normal case) because the world is so constructed that self-encouragement or self-offence is either pragmatically empty or pragmatically impossible. For instance, we tend to believe that a person always (in some way) influences himself/herself. Therefore, *I influenced myself to go is pragmatically empty. On the other hand, enticement and encouragement seem to lexically presuppose two independent wills (an enticer and an enticed, an encourager and an encouraged) and, therefore, sentences such as *I encouraged/enticed myself to go are pragmatically impossible. Similarly, the original metaphor involved in the meaning of a Reflexive verb such as behave (derived from have) appears to preclude a non-reflexive use (although there seems to be some semantic change going on here; see footnote 2).

Now that we have an intuitive grasp of the motivation for the Deep Structure constraints on Non-Reflexive and Reflexive verbs, it is evident that these considerations can now be used (at least obliquely) in our attempt to motivate Inclusion Constraint violations. The connection is the following: while the problems with *I influenced myself and *I encouraged myself involve situations which are pragmatically empty or impossible, the problem with sentences such as *I convinced us seems to involve situations which are pragmatically too complex. As will be amply illustrated below, in each Inclusion Constraint violation, the speaker-listener is forced to bring together (i.e., entertain simultaneously) two sets of conflicting assumptions about the situation represented by the sentence--one set of assumptions associated with the reflexive action/state of affairs and one set associated with the non-reflexive action/state of affairs. Unlike the Deep Structure Constraint cases, however, in these cases, it appears that even though these speaker-hearer assumptions are compatible with a possible state of affairs in the world (i.e., they are not pragmatically impossible) and, when communicated, this state of affairs would be considered to constitute valuable information (i.e., it is not pragmatically empty), the speaker, nevertheless, will not tolerate the conflict within the bounds of a simplex sentence (and in certain other constructions; see the Gapping examples below). As will be formulated more explicitly in subsequent sections of the paper, the speaker-listener seems to demand a certain level of contextual/implicational homogeneity.

A few examples will clarify this point.

A standard dictionary definition of convince runs something like "to bring by argument and evidence to belief." Thus, both I convinced myself to go and I convinced him to go are entirely appropriate uses of convince. One would hardly wish to posit two lexical meanings for the two instances of convince cited above. Certainly, convincing oneself is a different process from convincing others, but this difference, it seems, does not differ sufficiently in quality from the difference in convincing Tom versus convincing Bob. In both cases, the lexical meaning holds true; someone is "brought by argument and evidence to belief." With respect to lexical considerations, then, *I convinced us should be fine. Yet, as with the other Inclusion Constraint verbs, it is not.

The problem with the Inclusion Constraint violation appears to involve extra-lexical, pragmatic assumptions speakers make with respect to the reflexive and non-reflexive uses of verbs such as convince. For instance, in the case of convince, speakers generally assume that the person doing the convincing is already convinced of the issue in question. While cases of deception are certainly not rare (and, therefore, this assumption has no absolute, logical basis), this assumption is usually valid and is part of the knowledge of the world (i.e., knowledge of what is involved in a normal act of convincing) which speakers use to interpret a sentence as John convinced Bob to go. The problem is: speakers also know that this assumption is invalid when an instance of self-convincing is involved. Certainly, one cannot convince oneself if one is already convinced! In the reflexive case, speakers know that convincing certainly involves "bringing to belief by argument and evidence," but they also know that the agent who manipulates the evidence and arguments is also the one who goes through the process of being convinced. That is, they know that the assumption they normally make about the non-reflexive act of convincing is inappropriate in the reflexive case.

The problem with *I convinced us, then, is that the speaker is forced to simultaneously entertain two contradictory assumptions about the situation represented. He must both assume the the referent of I is already convinced (so that he can be persuasive in convincing others) and not yet convinced (so that he can weigh the alternatives and convince himself). The claim here is that it is this clash of speaker assumptions which underlies all Inclusion Constraint violations.

The interesting point here is that, unlike the Deep Structure Constraint violations, these violations are not dependent on the way the world is constructed but on the way speakers process and use their language. It is certainly possible (and would make sense) for a speaker either to entertain both assumptions simultaeously or simply to dispense with the assumptions altogether in the cases where he wishes to speak of non-reflexive and reflexive convincing in the same breath. It is a significant fact about English syntax (and, perhaps, language processing in general) that speakers do not choose to do so.

Of course, the other half of this argument is that, with Normal verbs, this clash of speaker assumptions does not occur--and this seems to be the

case. In a sentence such as I drove us to Chicago assumptions associated with the fact that I drove myself do not conflict with assumptions associated with the fact that I drove others as well. I do not have to have already driven to Chicago (or some such thing) in order to drive others to Chicago. This appears to hold for all of the Normal verbs listed in Section II. (i.e., bandage, cover, chain, dry, etc.). In these cases, assumptions that speakers make about the qualities that agent must have in order to perform the relevant action are independent of and, therefore, do not conflict with assumptions made about the qualities of the object(s)/ receiver(s) of the action. It is the claim here that this is what underlies the well-formedness of these sentences with Normal verbs.

Notice, this expanation can also motivate nicely why the benefactive sentences cited in Section I. are well-formed. The conflict in assumptions outlined here is tied heavily to the semantics of agents and patients in transitive sentences. Sine benefactive NP's stand in a different semantic relationship to the agent and patient of the sentences in which they appear, it is logical to assume that these violations might not occur when the overlapping coreference is between the subject NP and a benfactive NP.

Applying this analysis to some of the other Inclusion Constraint verbs, similarly satisfying explanations for overlapping coreference violations emerge.

For instance, a standard dictionary definition of teach runs "to impart knowledge or skill to." Thus, I taught myself and I taught him are both perfectly appropriate. In both cases, knowledge or skill is imparted, and, again, one would hardly want to claim that these sentences involve two distinct lexical meanings of teach. However, when non-reflexive teaching is involved, speakers generally assume the the teacher him-/herself has the knowledge or skill which is subsequently imparted to the student. That is, speakers make certain assumptions about the relationship between the knowledge imparted to the student and the imparter of that knowledge (i.e., that the imparter of the knowledge is not a mere intermediary but is one who adds something to the knowledge in way of presentation or content). However, as with the convince case, speakers also know that this assumption is invalid in the case of reflexive teaching. Just as one cannot convince oneself if one is already convinced, one cannot impart knowledge to oneself which one already (in some form) has. In self-teaching, knowledge and skill is certainly imparted, but that knowledge and skill is not a prior possession of the imparter. The knowledge certainly comes from somewhere, but not from the teacher.

Consequently, the problem with *I taught us to swim is parallel to *I convinced us to go. In attempting to assign a reading to *I taught us to swim, the speaker-listener is forced to simultaneously view the referent of I as both knowing how to swim (so that he can teach the others) and not knowing how to swim (so that he can teach himself). Again, it seems that speakers will not tolerate this situation and the Inclusion Constraint violation results.

Ask is another interesting case. A standard dictionary definition of ask runs "to put a question to." Consequently, I asked myself what I was doing there and I asked him what he was doing there are both perfectly

appropriate uses of ask. In both cases, a question is posed and one would hardly want to argue that two lexical meanings of ask are involved. However, in the non-reflexive case, speakers generally assume that the asker is requesting information from the person asked--information which the asker does not have (or, at least, pretends not to have) and the asker has (or, at least, potentially has). That is, speakers assume that the question has a certain function (i.e., to request information). In the reflexive case, however, speakers know that this assumption is invalid. In cases of self-questioning, speakers know that the asker and person asked are the same person and that, therefore, the question asked can not be a true request for information. If one does not have certain information, one cannot, at the same time, supply that information. In the reflexive case, a question is certainly posed but not as much as a request for information as as a mere reflection on a situation. Speakers know that in both reflexive and non-reflexive asking, questions are posed, but they also know that these questions serve very different purposes.

Consequently, the problem with *I asked us what we were doing there is now the familiar one. In attempting to assign a reading to it, speakers are forced to assume that the question posed serves two distinct functions. It must be both a legitimate request for information and a mere reflection on a situation. As in the other cases, this conflict is intolerable and an Inclusion Constraint violation results.

Force is another interesting example. A standard dictionary definition of force runs "to compel to perform an action." Consequently, I forced myself to go and I forced him to go are both entirely appropriate uses of force. In both cases, there is a compeller and a resister, and, again, one would not want to claim that two lexical meanings of force are involved. However, in the non-reflexive case, speakers generally assume that compulsion can only come from external forces. That is, the physical world is constructed such thatthe very same entity cannot both force and resist its own forcing. In the physical world, compulsion is generally defined between entities. In the reflexive case, however, this assumption must be abandoned. Compulsion is involved but now both the force and the resistance are produced by the same entity--one part of the entity producing the force and another part of the entity, the resistance.

Consequently, the problem with sentences such as I forced us to go is that a speaker must simultaneously view the referent of I as both a part (so that it can compel another part of itslef) and as a whole (so that he/she can compel the other people involved). Again, while there appears to be no absolute logical reason why these two assumptions cannot be maintained simultaneously, speakers refuse to do so and an Inclusion Constraint violation results.

The problem with this part-whole dichotomy seems to be very general and applies to a wide range of predicates. For instance, sentences such as *I threw us into the truck and*I gathered us together appear to be bad because the reflexive uses of these predicates involve relationships between various parts of a person (a will? a body?) while the non-reflexive uses involve relationships between complete individuals. It seems that these situations invariably produce Inclusion Constraint violations.

IV. Inclusion Constraint Verbs: A Syntactic Test

At this point, one might ask: are there other syntactic processes which are sensitive to this clash in speaker assumptions associated with Inclusion Constraint verbs?

While intuitions vary widely on the acceptability of Gapped sentences, according to many informants, Inclusion Constraint verbs will not "gap" in structures which coordinate a reflexive and a non-reflexive usage while Normal verbs will. For instance, with Normal verbs, one finds:

Context: Who covered who?

(9) a. John covered himself, and Bill, his dead companion.

Context: Who drove who?

b. The captain drove himself, and the manager, the rest of the team.

Context: Who freed who?

c. Houdini freed himself, and the police, the rest of the hostages.

Context: Who poisoned who?

d. Bill poisoned himself, and Bob, his little sister.

However, with Inclusion Constraint verbs, one finds:

Context: Who convinced who?

(10) a. *Bill convinced himself, and Bob, his little sister.

Context: Who threw who in the truck?

b. *Bill threw himself in the truck, and Bob, his little sister.

Context: Who taught who to swim?

c. *Bill taught himself to swim, and Bob, his little sister.

Context: Who asked who whether they should leave?

d. *Bill asked himself whether he should leave, and Bob, the teacher.

Interestingly, the anomaly in the sentences in (10) seems to be the same as the anomaly one feels in Inclusion Constraint violations. For instance, in (10a), one wants BIll to be both convinced already (so that he can convince

others) and to be still unconvinced (so that he can weigh the alternatives and convince himself). Gapping seems to demand the same sort of implicational homogeneity that constructions with overlapping coreference demand. While the problems with Gapping are well-known, the data above (1) demonstrates that another syntactic process is sensitive to the same pragmatic anomaly which is produced by overlapping coreference with Inclusion Constraint verbs in simple sentences and (2) provides a syntactic test which can distinguish Inclusion Constraint verbs from Normal verbs.

V. Conclusion

Of course, the major unresolved problem with this analysis is a precise formulation of the particular degree and nature of the divergence in speaker assumptions which is necessary to trigger the Inclusion Constraint violation. All verbs seem to function in a wide range of contexts--each of which generates various distinct sets of speaker assumptions. For instance, if, in a group of students, Bob is a genious and Bill, a slow-learner, a speaker might make various highly conflicting assumptions about the process of "imparting knowledge" of Mathematics to one boy as opposed to the other. Yet, nonetheless, I taught them Math (where them refers to Bob and Bill) will be grammatical. The problem is: the pragmatics of conflicting speaker assumptions concerning the particular uses of various verbs appears to create syntactic violations, but only certain sorts of conflicts are intolerable. It appears that the situations represented by constructions with overlapping coreference are (in some cases) simply the sort of situation which produces some particularly intolerable conflicts.

As a preliminary result and a beginning to a solution to this problem, this study provides the following observations and speculations (none of which are entirely worked out):

(1) Inclusion Constraint verbs tend to be verbs which, in some way, make essential reference to states of mind (e.g., reproach, teach, convince, love, hate, etc.) while most Normal verbs represent overt physical actions (e.g., bandage, cover, dry, drive, etc.). It seems that with verbs which refer exclusively to a physical action, there is usually a nice symmetry between the pragmatics of the reflexive and non-reflexive uses of the verb while, with verbs which refer to states of mind, speakers must abandon or alter many of the assumptions that they normally make concerning non-reflexive action when the reflexive action is involved.

(2) Inclusion Constraint violations invariably appear where a speaker generally assumes that, in order to perform the non-reflexive action, one must have already received, at some earlier time, the effects of that very same action (e.g., teach, convince, etc.). Since, in constructions with overlapping coreference, an entity must both perform the non-reflexive action (i.e., be an agent) and receive the effects of the reflexive action (i.e., be a patient), this situation always

creates a particularly strong clash of speaker assumptions.

(3) Inclusion Constraint violations invariably result where, in the reflexive use of the verb, the speaker must assume that the action relates two parts of a whole whereas, in the non-reflexive use, this assumption is not necessary (e.g., gather together, throw, force, etc.). In constructions with overlapping coreference, speakers seem to demand that the referent of the subject NP be somewhat fixed--either to a part or to the whole, but not to both simultaneously.

VI. Summary

This study has attempted both description and explanation. With regard to description, it has been argued:

(1) that Postal's formulation of the Inclusion Constraint as a clause mate condition on NP's with overlapping coreference is far too strong and must be abandoned.

(2) that the Inclusion Constraint is a lexically-governed constraint on overlapping coreference between the subject and direct object of certain predicates.

(3) that the Inclusion Constraint is related (albeit obliquely) to the larger problem of Deep Structure Constraints between the subject and direct object of certain predicates (i.e., Reflexive and Non-Reflexive verbs).

With regard to explanation, it has been argued:

(1) that the Inclusion Constraint is a result of a clash of speaker assumptions with regard to the pragmatics of the reflexive and non-reflexive uses of certain verbs when those verbs are used in constructions with overlapping coreference.

(2) that Normal verbs produce no such conflicting assumptions and, therefore, no such violations.

(3) that another syntactic process, Gapping, is sensitive to these conflicting assumptions as well and can serve as a diagnostic for Inclusion Constraint verbs.

NOTES

* I would like to thank Jerry Morgan, Georgia Green, Irmengard Rauch,

and, especially, Rich Halpern for their comments on earlier versions of this paper.

[1] Postal's "further conditions" mainly involve complications with derived clause mates vs. deep structure clause mates. Since I am attempting to understand the phenomonon first in simple sentences, these considerations are irrelevant at this time.

[2] This may very well be a misrepresentation. It appears that sentences such as (i) and (ii) are acceptable:

(i) Now, you behave your mother.
(ii) Now, behave the sitter while I am away.

If this is so, behave is an Inclusion Constraint verb. I find that my intuitions with regard to this verb, however, are somewhat chaotic. While (i) and (ii) are fine, (iii) is strange.

(iii) Your son behaved me while you were away.

Whatever the proper analysis of behave might be, the category Reflexive verb is still (at least) a logical possiblility. Interestingly, however, these verbs appear to be very rare.

[3] The terms "referentially distinct" and "referentially identical" here must be taken within the context of known identity and normal space-time physics. As Jerry Morgan has pointed out to me, the non-reflexive verbs can all be used in reflexive constructions if one considers cases of mistaken identity. For instance, one cannot normally say: *I accused myself of being an FBI spy. Accusation usually demands that the two parties involved, at some previous time, were ignorant of the other's actions. However, as Morgan points out, if I accuse the professor who teaches LInguistics 401 of being an FBI spy, and, later, find out that, in fact, I teach it, I can say: It appears that I have accused myself of being an FBI spy. In this case, one is not ignorant of another's activities but of the other's defining characteristics (i.e., teacher of Ling. 401).

[4] Of course, I am also relying here on Postal's discussion of constructions which involve more than one simplex. It is an easy matter to show that sentences such as: I think that we should leave do not involve Inclusion Constraint violations. The problem is to delineate exactly which NP's in the same simplex are allowed and which are forbidden.

[5] See footnote 2.

REFERENCES

PERLMUTTER, David M. 1971. Deep and surface structure constraints in syntax. New York: Holt, Rinehart and Winston.
POSTAL, Paul. 1974. On Raising. Cambridge, MA: MIT Press.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

SOME MYSTERIES OF SUBORDINATION

Alice Davison

In a number of languages, there are constructions which are neither clearly subordinating nor coordinate; some have features of both kinds of relations between clauses. Ambiguity of structure and 'degrees' of subordination present problems for a formal analysis allowing only two kinds of sentence-internal clause relations. It is proposed that if subordination is viewed as a combination of often conflicting factors, these cases can be analyzed in a systematic way. Examples will be considered from adverbial and coordinate construction in several different languages, showing how syntactic relations can be reinforced or overridden by symantic and prgmatic factors. It is argued that the 'unmarked' case (in contrast to other similar constructions) is the most susceptible to interence from other factors.

0.1 Introduction

It is commonly assumed that clauses can have only three possible relations to other clauses. They can be not connected at all, except as adjacent units in a discourse; they may be conjoined as coordinate clauses, each having as a main clause or independent clause, or they may be asymmetrically connected as main and subordinate clause in a subordinating construction. The purpose of this paper is to examine what the notion of subordinate clause means, and to ask whether it is a useful and viable notion in the light of cases from a number of languages where the main-subordinate and subordinate-coordinate distinction seems to be neutralized or to be a multivalued rather than a binary distinction. That is, cases have been noted where subordinate clauses are distinguished by two degrees of subordination. In other cases a conjunction may be both subordinating and coordinating. Finally, the surface markers of subordination or coordination may not match the clause relations intended by the speaker and conveyed indirectly. These cases call into question not only the status of the notion of subordination, but also the validity of formal mapping between surface structure and a representation of meaning encoded by that structure.

The examples discussed here have more in common that I expected they would, since I found them by the expedient of looking for mention of anomalies of subordination and coordination in various grammars and grammatical sketches. They come from languages other than English. I have therefore not discussed some well-known English cases which have been fairly extensively analyzed, such as Main Clause Phenomena in subordinate clauses (Hooper and Thompson 1974, Green 1976) and extraposed relative clauses (Ziv 1976). I have kept the discussion to non-English examples partly to add to the range of known problems and to make a survey of the different kinds of constructions where problems of description arise in connection

with subordination. But I have made this choice also to gain some distance and objectivity in dealing with the data.

Most of the writers I cite find it hard, when writing about their native languages, to give an exhaustive definition of subordinate constructions which is based on systematically occurring properties and not on list-like enumeration. A summary of the kinds of criteria used is the following, which is derived from work in the generative summoned principally on tradition, L. G. Andersson 1975, and work in the philological or structural tradition, by Poutsma (1926), Curme (1931), Le Bidois and Le Bidois (1968), Jespersen (1940), von Wartburg and Zumthor (1947), Allaire (1973), etc.

(1) Syntactic markers:

a. non-finite verb;

b. complementizer, conjunction (of the right kind), relative pronoun, in initial position;

c. special word order, impossibility of inversion (in English), presence of special mood (eg. subjunctive);

d. ability to undergo movement as a constituent: Passive, Extraposition, Adverb Preposing, etc., may apply;

e. Backwards pronominalization, deletion of subject by Equi, movement of subject by Raising; immunity to Gapping;

f. proper inclusion within another clause.

There are also semantic and other criteria which I will call 'pragmatic' for want of a more precise term. Some of these criteria are more precise than others; for instance (2)a and (3)a appeal to intuition more than to objectively definiable or testable features.

(2) Semantic markers:

a. 'dependency of thought; greater 'cohesion' of constituents.

b. contents of the clause are presupposed to be true, or not a separate assertion, or truth is not in question and is determined independently of the rest of the sentence contents.

c. contents of the clause are in the scope of some higher predicate: negation, question, etc.

d. clause plays a grammatical role in another clause: subject, object, adjective, adverb.

(3) 'Pragmatic' markers:

a. clause expresses background information; not a topic sentence. (Here the usual difficulties arise of exhaustively defining 'topic'.)

b. clause functions as a modifer of some other sentence, adjacent in discourse. (The sentences may have separate intonational contours and even be separated by pause).

The cases in which these criteria work perfectly well, and agree, are certainly not lacking. But there are many cases, though not as many, where the different criteria either cannot apply at all, because many of them are hard to test or are limited to a restricted syntactic or other context, or where they give contradictory answers.

There are many unpleasant alternatives. One can dissociate syntactic and semantic subordination entirely, following Allaire (1973).[1] One can opt for many values of subordination, or closeness of connection, more or less on the analogy of biochemistry, where molecules may be viewed as cohering by stronger or weaker electrical charges, and in which the primes are known to have specific valencies. (Longacre (1970) and Kuno (1973) suggest that there are degrees of subordination, and of closeness of connection, but do not say how they are to be represented; the biochemical analogy is my exaggerated carrying to its logical conclusion the structural consequences of this notion.)

All of the cases to be surveyed involve unmarked orders. These are of two kinds, temporal/causal order and main-subordinate clause order. I think it is universal that two clauses without a temporal or causal conjunction connecting them with nevertheless be understood as being temporally or causally related, in the same order in which the clauses are uttered. I will call this natural or unmarked temporal order. (Bever 1970, Osgood and Sridhar 1978) There is another unmarked order, having to do with the neutral or normal position for subordinate clauses, particularly complement and adverbial clauses. I will call this unmarked subordinate order; in English and other SVO languages it is main clause-subordinate clause (judging by recall pheonomena reported in Kornfeld 1973, Townshend and Bever 1977, etc., by scope phenomena altered by Adverb Preposing etc.) In Japanese it is subordinate-clause-Main clause. I believe this is true of SOV languages at least for complement and adverbial clauses. Hindi relative clauses are correlative or follow the head NP, and complement ki 'that' clauses are extraposed, but their underlying position is to the left of the higher clause verb. Infinitive complement clauses and adverbial clauses occur to the left of higher clause material, in normal word order.

Using these notions of unmarked word order, the notion of unmarked conjunction, defined in terms of paradigmatic contrast; along with presupposition and sharedness of contents, I think it is possible to account for the anomalies of subordination which are described in the following sections. Degrees of subordination and indeterminacy between subordination and coordination can be explained in terms of combinations of features which are independently justified in linguistic description, rather than in terms of some linguistic analogues of atoms and positive and negative charges, or other mystical or ad hoc terms. It may turn in the end that some new linguistic concepts are needed, or that formal representation is inadequate as heretofore conceived. But before rejecting what is now available, I want to take a somewhat literally conservative view, to see how much value can be wrung out more conventional explanations. I propose to look at data which have not been placed side by side before, and will

show that many of the anomalies have a great deal in common.

1.0 Indeterminacy between coordination and subordination

This first section will be concerned with conjunctions in Japanese and Hindi which have the meaning of approximately 'and then', but do not always have the properties of coordinating conjunctions. Alternatively, they may also be translated with the participial construction 'having Ved', so that the first clause conjunct is a subordinate clause. But this translation into English does not account for the instances in which the construction is felt to be coordinate, and it imposes a property of the English expression, that the truth of the first conjunct clause is presupposed, on a construction where this is not always the case. Both Kuno (1973) and McGloin (1972) suggest that some conjunctions in Japanese are 'less' or 'more' coordinating than others, that there are degrees of subordination (cf. Kuno 1973:200-8). If these distinctions are to be expressed solely in terms of lexical and structural matching in phrase structure trees, some third (or fourth) structural relation will have to be invented. On the other hand, if we retain the subordinate: coordinate dichotomy, it may be possible to find some other additional features which determine coordinate or subordinate properties. In this section a partial solution will be offered based on contextual and paradigmatic properties of the conjunctions, and the information conveyed by clause order alone.

Both Japanese and Hindi are SOV languages (though Hindi is less strictly SOV). The normal position for subordinate clauses in left-most position, for both adverbial and complement clauses; in Hindi however, the equivalent of that are extraposed to the right. The conjunction is always medial, whether it is subordinating or coordinating, and in Japanese both types of conjunction are adjoined to the left-most constituent. Thus the right most constituent is always a main clause, in either a subordinate or coordinate construction. It is the left-most constituent which is potentially ambiguous, as either a subordinate or main clause.

1.1 In Japanese, the conjunction -te/-i 'and then', 'having Ved' can be analyzed as either subordinate or coordinate; it is interesting to note that the traditional Japanese grammarians did not mention the distinction, as though it was not a relevant or salient property of such constructions (S. Makino, p.c.) Kuno lists it as either coordinate or most clearly subordinate, as opposed to intermediate cases such as -toki 'when' and -node 'because'. The contrast between coordinate and subordinate -te/-i is illustrated by the sentences below:

(4) John ga uwagi o nui-de/ nug-i, Mary ga hangaa ni kaketa
J. subj jacket-obj. take-off V-and M. subj. hanger-on hung
-ing
'John took off his jacket, and Mary hung it on a hanger (Kuno 1973: 207)

(5) John ga uwagi o nuide/nugi Ø hangaa ni kakata
J. subj. jacket-obj. taking off hanger on hung

'John, taking off his jacket, hung it on a hanger.' (Kuno 1973:200)

The clauses have a coordinate relationship when their subjects are unlike, as in (4), and a subordinate-main clause relationship when their subjects are identical, as in (5), when the second instance of the NP John has been deleted. Kuno notes this (207), and notes also that the subject of the second clause is not able to be topicalized and moved into left-most position. This would be possible if the construction were a subordinating one; the scope of the question particle -ka would command both the first and second clause verbs, likewise negation or modals in the second clause.

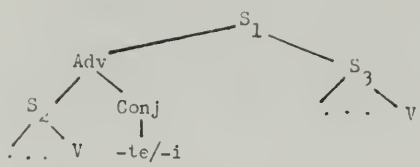
There are two central questions here. First, an explanation is needed for why likeness of subject is sufficient to produce a subordinate-main clause relation between coordinate sentences. Second, why does this conjunction in particular have the property of being both coordinating and subordinating conjunction? There are many other Japanese conjunctions describing sequence of events or time relations or combinations of events, yet likeness of subject does not have such a drastic effect on the syntactic relations between the clauses which they link.

From an intuitive point of view, related to connections between sentences in discourse, coordinate structures are commonly felt to involve less of a connection or a looser connection between conjuncts than subordinating structures, especially where the main clause and the subordinate clause share semantic material, particularly coreferential NPs. Longacre (1970) describes three degrees of connection, 'tight', 'loose' and 'balanced'. It is interesting to note that tightly connected clauses involve 'cohesion' and cross reference (1970:795), while 'balanced' structures involve contrast, and presumably lack of the factors found with 'tight' constructions. As Halliday and Hasan 1977 note, shared semantic material and particularly identity of reference are primary devices indicating connectedness in discourse. So the fact that like subjects create a subordinate construction in Japanese is perfectly consistent with other observations about coordination and subordination.

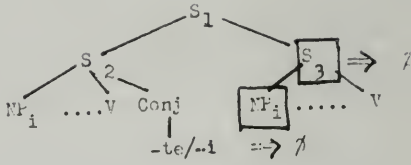
In a SOV language like Japanese, the actual structural difference between coordinate and subordinate structures is minimal. There are no differences of word order of of position of the conjunction. The basic difference seems to be that in a subordinate construction the left-most conjunct is more deeply embedded than the right hand one, perhaps by virtue of an adverbial or NP - conj. node dominating the subordinate constituent. The contents of the right hand conjunct, the main clause, thus command the contents of the left-hand conjunct, but not vice-versa. This configuration would be consistent with the question, negative and modal scope tests which Kuno and McGloin use to differentiate clause connections. I therefore postulate that deletion of the identical subject in the right conjunct of a -te/-i construction causes pruning of the right-most S node, thus turning a coordinate construction into a subordinate construction. The difference between coordinate and subordinate constructions is sketched in (6)a and b. Deletion of the right-hand subject NP in (6)b creates (7), which resembles the subordinate structure (6)a in asymmetry of command between the right hand and left hand constituents. (Conversely -te/-i might involve a left node raising rule which creates a coordinate structure out of a subordinate structure when the SD for NP deletion is not met, but I see no motivation

for this view.)

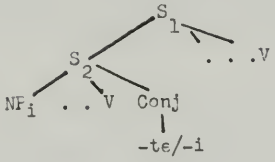
(6)a.



b.



(7)



Next, I want to consider the conjunction -te/-i in a paradigmatic fashion, in contrast to other coordinating conjunctions like -si and the subordinating conjunctions. (Information on these conjunctions comes from various chapters of Kuno 1973 and from Chapter 3 of McGloin 1972). -Si indicates no temporal relation between the events described in its conjuncts, except perhaps for the weakest kind of relationship conveyed conversationally. Among the temporal and causal conjunctions, -te/-i is really the least marked, in that it places no special restrictions on the contents of the conjoined clauses.

McGloin (1972:53-7) contrasts three degrees of subordination, dividing conjunctions into three classes illustrated in the following sentences:

(8) obaasan-wa kawa-e ik-i/it-te Ø sentaku -o si- na - kat - ta
grandmotherT river going washing do-neg.-past

'Grandmother didn't go to the river and wash'.

(9) obaasan-wa sentaku-o si -te kara kaimono - ni ik- ana- kat -ta
grandmotherT washing obj do-perf. after shopping for go -neg-past

'Grandmother didn't go for shopping after she did washing.'

(10) watasi-wa syuzin - o aisi - te i-ru kara nagut-tari si - na -i
I top. husband -obj. love-ger. stative since beat do-neg.
pres.
'I don't beat my husband, because I love him.'
The properties of the three classes are summarized as:

(11) Class I: The scope of negation extends over both verbs. Includes -te/-i, 'and then', (like subject), -nagara 'while' (time), and -maeni 'before.'

(12) Class II: The scope of negation may include both verbs, as in I, or it may extend just to the second verb. The first conjunct is therefore assumed to be true and immune to negation, as in After she did washing, Grandmother did not go shopping. This class includes -kara 'after' and -ato 'after'.

(13) Class III: The negative negates only the second clause verb. The contents of the first clause are presupposed to be true, and thus not negatable ordinarily. This class includes -kara 'since' (reason), -tame ni 'since', -nagara 'while, although' (reason) and -tabe ni 'whenever'.

I suggest that there are only two kinds of clause connection, subordination and coordination, and that the differences represented by these classes are the effect of a lexical property of the conjunctions. This property has to do with the truth of the clause contents, whether it is stipulated as true, as in Class III, may be assumed as in Class II, or is unmarked for this property, as in Class I. The truth of the clause marked by -te might be assumed, conversationally, by virtue of reference to a specific event in the past, but it need not be.

-te/-i are unmarked with respect to various other stipulations which conjunctions place on their conjuncts. According to Kuno, -te kara 'after' expresses immediate temporal or logical sequence, -to 'upon' indicates an antecedent-consequent relationship between events or states which do not overlap in time; furthermore they are generic, habitual and naturally occurring sequences, not contrived in some specific circumstances. -tara 'if' connects S_1 which must denote an event or state which is completed before the onset of the event or state denoted in S_2. It is not conditional ie='when', if the events are actual facts, occurring in the past. -nara 'if' conveys that S_1 is asserted by the speaker.

-te/-i is unmarked with respect to -si 'and' in its relation to the sequence of clauses. -si expresses no temporal order at all. The preferred order for clauses in utterance time seems to be the order which matches the time sequence described by the clauses which are conjoined. The first conjunct normally denotes an event which precedes the event described in the second conjunct, or an event or state which is the precondition or cause of the event or state expressed in the second (cf. Schmerling 1975 for the conversational properties of such understandings). -te/-i fits such a temporal or causal schema perfectly. In fact Kuno notes that it has a causal interpretation:

(14) a. John ga ki -te hotto sita
J subj come-ger. relieved was

(I) was relieved by John's coming'.

b. John ga ki - te, nigiyaka - ni natta[2]
come ger. lively become

(It) became lively due to John's coming'. (Kuno 1973:209)

Note that it is the second NP subject which is deleted, not necessarily the first. The verbs in the second clause are either impersonal (and so by definition its subject cannot be like a personal subject in S_1) or emotive; because of 'empathy' phenomena the inexpressed subject is first person (S. Makino p.c.) I conjecture that these sentences are actually coordinate, the causal reading being implicated by the verb in S_2, which also determines whether the subject of S_2 is expressed or not. While sentences like (14) seem to be somewhat more subordinate than most coordinate sentences, the tests for subordination, whether the first clause can be in the scope of a question particle or negative in the second clause, show that the construction is actually not subordinate. If -te/-i does allow Equi NP, deletion affecting the first clause, which in turn causes syntactic readjustments resulting in a derived subordinate structure, these facts are not surprising.

1.2 The conjunctive participle in Hindi-Urdu

Many of the properties of Japanese -te/-i are exactly mirrored in the conjunctive participle or gerund in Hindi, and in similar constructions in other Indic and Dravidian languages of India (Lindholm 1975 describes a construction in Tamil of this type). The subordinate clause always precedes the main clause. The suffix -kar is attached to the bare verb stem of the verb of the first clause. The subject of the subordinate clause is always identical in reference to the underlying subject of the main clause, and it is never separately expressed. -kar has the approximate meaning of perfectiveness, usually indicating that the event or state referred to in the subordinate clause precedes that of the main clause.

It is used in three principal ways, which might be viewed as three different degrees of subordination. It can be used to express a coordinate relation between clauses, such that neither is more prominent than the other. This is the 'and then' meaning.

(15) ghar jaa-kar us - nee khaanaa khaayaa
house go-perf. him-obl.-erg. food ate

'He went home and ate (dinner).' Lit. 'Having gone home, he ate'.[3]

This construction contrasts with genuine adverbial subordinating constructions which assert the time relation with (infinitive) - kee baad 'after' or (stem) - tee hii 'as soon as'.

(16) ghar jaa-nee kee baad / pahũc -tee hii us-nee khaanaa khaayaa
house go-inf. after arrive-imp. emph. him-erg.food ate

'He ate (dinner) after going home / as soon as he got home.'

It contrasts with ordinary coordination aur 'and' or too 'then' (in conditional constructions). If not conditional, conjunction involving like subjects is usually expressed with the -kar construction.[4] But conjunction involving negation or non-perfective aspectual modification of the first

conjunct cannot be expressed with the -kar construction. -kar and aur are therefore in mor or less complementary distribution.

It should come as no surprise now that the conjunction which has the surface features of subordination (non-finite clause, subject deletion) is the case in which there is shared material (like subjects) and no opposition with the main clause, no contrast indicated via negation. Neither conjunct clause is given any special prominence in discourse, (cf (21) below) and neither is presupposed. This last property is demonstrated by the fact that -kar sentences can be used to express conditional relations, if time reference is to the future or non-past events in general.

(17) aisee kar -kee (=kar) aap kursii tooR dẽẽgee
that way do -perf. you chair break give-future

'If you do that you'll break the chair'.

Here and in (18) the kar sentences more nearly match subordinate/main clause structures, as reflected in the English translations.

(18) mãĩ - nee raam -see mil- kar ghar gayaa
I - erg. Ram -with meet-perf. house went

'Having met/seen Ram I went home'.

The English 'having Ved' translation is accurate in that it doesn't assert any special time relation except perfectiveness and sequence, but it is not always an appropriate translation because first, it refers to a definite event in the past, and second, it gives discourse prominence to the main clause alone.

The 'subordinate' -kar construction contrasts with more explicit lexical conjunctions of time, like -kee baad. The latter may be in the scope of question, as in

(19)a. kyaa aa - nee raam - see { mil-nee kee baad } khaanaa khaayaa?
Quest.you-erg. Ram -with { meet-inf. after } good ate
b. { *mil-kar }
{ meet-perf. }

'Did you eat after seeing Ram? Was it after seeing Ram that you ate?

The -kar version is ungrammatical.

Finally, the most tightly subordinate use that -kar has is as an adverbial.

(20) meerii laRkii xuub sooc - kee kaam kiya
my-f. girl very think-perf. work did

'My girl did the work very thoughfully'. (Bailey 1956:144)

(21) dauR -kee jaaoo nahĩĩ too naaraaz hũũgaa
run-perf. go-fam. not then annoyed be-fut.Ips.

'Go quickly or I shall be annoyed'. (Ibid)

The events in the second clause are more or less coterminous with the action or state referred to in the first clause. The subordinate surface structure, containing a non-finite verb and lacking a subject as a consequence of obligatory like-subject deletion, seems to be exploited to express the relation of modification which the first clause has to the second. But I would guess that there is no real way to distinguish between this use and the others, in terms of syntax or semantics (eg. presence of certain kinds of predicates etc.).[5] I would imagine that only real world knowledge, and possibly some conventions of usage, (cf. Morgan 1978) serve to distinguish the 'after, and then' readings from this one.

Jim Lindholm (1975) has argued in great and convincing detail that it is impossible to decide whether the Tamil perfective participle construction is coordinate or subordinate or adverbial, as it has all three uses, and none of the three uses serves as a convincing single category from which the other two can be derived in any natural way. Likewise there is no way to argue that it is derived from underlying constructions which could also surface as coordinate or adverbial structures, since the participle is different in certain respects from other conjunctions. It seems to me (as a non-native observer of data from this paper and from Hindi) that the facts in Hindi and Tamil are pretty much the same.

But I think a case can be made that -kar, the same linguistic entity in all uses, is just an unmarked subordinating conjunction.[6] I choose the term subordinating because of the surface syntactic markers of subordination which it exhibits and the fact that restrictions against negation, and dative-subject predicates, are placed on the left-most clause. It indicates but does not assert temporal and possibly causal sequence, in most cases being interpreted as such. But in others, the adverbial reading, the context may determine the interpretation that the first clause is a precondition to the second is not necessarily temporally prior, only logically. Finally, -kar, not being itself asserted, does not assign discourse or speech act prominance to either constituent. Notice that the scope of the question in (22) is not the main clause but rather the subordinate clause.

(22) woo barton saaf kar - kee hii gaii thii na?
3ps. pot(s) clean make-perf. emph. gone-f. was-f. neg. tag

'She cleaned the pots before she left, didn't she?' (Bailey 1956: 144)
??She left having cleaned the pots didn't she?'

(23) khaanaa khaa - kee calii gaiii hoogii.
food eat - perf. gone.f. gone.f. be-fut. f.

'She must have eaten and left' 'She must have eaten before she left' (Ibid)

In (23) the scope of the future auxiliary (indicating conditional but strongly probable assertion) is both events, or possibly just the first. I would like to say therefore that -kar is just indifferent to the prominence which the context might give to either, or both conjunct clauses. More cases of

apparent reversal of the subordinate/main clause relation will be discussed in later sections.

In this section I have discussed two constructions, differing in language-specific details, which have common properties. These are:

(1) the clause order follows the natural temporal and causal order.

(2) The construction appears to be subordinate when the two conjoined clauses share identical subjects.

(3) The construction is 'unmarked' by comparison with similar coordinate or subordinate constructions.

I would like to claim that these facts are not accidentally related. The combination of clause order matching temporal order, and connection with an unmarked conjunction similar or identical in meaning, in effect neutralizes the subordinate/coordinate distinction. It allows the speaker to encode a wider range of combinations of clauses in these structures. Because of the cues from temporal order and the minimal basic meaning of the conjunction 'and then', the speaker can ignore the surface features of subordination (in the Hindi case) if the discourse context and the hearer's knowledge conflict with the purely syntactic cues. In both cases the 'degrees' of subordination falls out naturally in Japanese from the degree of shared material (like subjects) and the degree to which presupposition is associated with the conjunction. In Hindi, the range of interpretations of -kar, as coordinate, subordinate or as a nonclausal adverb, is determined by discourse prominence of the clauses referent, or by the salience of the clause itself. This might be measured in terms of preciseness of description (relative to the neighboring clause) and the amount of detail. Thus a bare verb stem with -kar is likely to receive the non-clausal adverbial interpretation, while a fuller clause with an expressed object might be more likely to be perceived as more prominent and therefore less subordinate.

2.0 Reversal and neutralization of the subordinate/main clause distinction

The Hindi examples in the preceding section offered a few cases where the subordinate clause on the surface actually had greater prominence in discourse than the syntactically marked main clause. In this next section I want to discuss two similar cases. The first is from French, where the conjunction que introduces a subordinate clause. But many French writers on French syntax have noted that these que constructions express temporal succession or a conditional relation as well as temporal relation, without the benefit of an actual conjunction occurring in the sentence. This is the view of writers such as Grevisse (1953), who as the author of Le bon usage has enormous authority about French syntax from a traditional point of view; well deserved for the acuteness of his descriptions. His feeling is that the second clause in (24) has the value of an independent clause, although it is introduced by the complementizer or conjunction que, which normally introduces subordinate clauses, particularly if they do not contain subjunctive verbs.

(24) La pluie avait cessé que nous allions à toute vitesse.
the rain had stopped that we go-imperf. at all speed

'The rain had stopped and we were going at full speed (Grevisse 1953:178)
'When the rain had stopped we were going at full speed'
??'The rain had stopped when/that we were going at full speed.

The paraphrase which least fits the communicative purpose of (24) is the one which follows the surface syntax.

Grevisse, Wagner et Pinchon (1962) and Gougenheim (1939) are more or less in accord concerning sentences with a conditional interpretation. The actual main clause functions as the antecedent of a conditional sentence (normally expressed by a subordinate si clause), while the surface subordinate clause is equivalent to the consequent, or main clause in a conditional.

(25) Elle l'aurait reconnu qu'elle ne l'aurait pas avoúe
She pro-would have recognized that-she neg. pro-would have neg. confessed

(Even) if she had recognized him, she wouldn't have confessed it.

(Grévisse 1953;sect. 179)

(26) Il me le dirait que je ne le croirais pas
He me it would-say that I neg. it would-believe neg.

(Even) if he told me it I wouldn't believe it.' (Wagner et Pinchon

1962:502)

(27)a. Vous m'interrogiez cent fois que je vous ferais toujours
You me- ask-imperf. hundred times that I you would-make always

la même réponse. (Gougenheim 1939:337)
the same answer

'If you asked me a hundred times I would still give you the same answer'.
'You may ask me a hundred times but I would still give you the same answer.'

b. Le verrais-je (que) je lui dirais ce que je pense. (Wagner et Pinchon (1962:502))

'If I see him I will say to him what I think'.

All of the above are clearly conditional sentences, with the first clause understood as the antecedent. The normal interpretations (in either French or English) of the sentences exactly reverse the surface main-clause/subordinate clause relations.

Non-conditional sentences may also show such a reversal, sentences for which a coordinate paraphrase would not be available, unlike (24). For example:

(28) Le cardinal n'avait pas gagné la porte que ses larmes
The cardinal neg had neg reached the door that his tears

violemment retenues débordèrent.
violently held back overflowed.

'Before the cardinal reached the door his tears, violently held back, overflowed'. (Sentence and paraphrase from Gougenheim 1939:337)

For Gougenheim, the second clause is evidently more deserving of being a main clause than the surface structure indicates, and he paraphrases as such:

(29) Avant que le cardinal avait gagné la porte, ses larmes, violemment retenues, débordèrent.

It therefore resembles (24), which another writer described as having an independent clause in second position. In both cases, and in fact most others, what is described is immediate temporal succession, and a cause-effect relationship too. The first clause gives the background and pre-conditions, while the second expresses the more salient result. I think this is the case in all the cases I have seen in which the indicative is used.

Here again we have clauses which follow natural temporal and causal order. They are connected by a very unmarked conjunction que, which has very little semantic content of its own and places no special restrictions of its own on its complements. The surface syntax follows another natural or unmarked order, namely that the main clause precedes the subordinate clause. At least in the case of adverbial clauses, the sentence final position is the neutral one, in verb medial languages like English and French. There is some evidence from recall experiments that coordinate sentences and main clause-subordinate clauses sentences have similar patterns of recall, while subordinate clause initial sentences have a very different one (Townshend and Bever 1977).

The temporal relation of two clauses linked by que alone is perfectly reconstructable from the order in which the clauses occur. The absence of any overt time adverb where clearly one is meant may convey by conversational inference some special time relation, but the notion of immediacy may be conveyed by the description of the events themselves, particularly when negation is involved in the first clause. This could be the case with the cardinal and

(30)a. Il n'avait pas fait deux cents pas qu'il fut arrêté
Le neg-have neg made two hundred steps that he was arrested

'He hadn't gone 200 steps when he was arrested (Chevalier et al. 1964:125)

b. =Avant que le cardinal eût gagné la porte ... (ibid)

That is, I think that the time relations and the notion of immediacy can be worked out from the order and contents of the clauses, while the strangely

unmarked conjunction que replacing a real time adverb serves as a license to ignore the surface syntax if the second clause is as salient in discourse as the first, or more so.

2.2 Coordination as subordination

Classical Greek has a coordinate construction with the conjunction kai 'and' which, according to H. W. Smyth (1956:486) is used to mean 'when'. This construction conveys 'sudden or decisive occurence or simultaneous action' (ibid). It is thus the syntactic inverse of the French construction just discussed, with approximately the same conveyed meaning. Greek has a main clause where French has a clause marked as subordinate.

Smyth cites some examples, all taken from histories (Thucydides, Xenophon):

(31) kai ēdē te ēn peri plēthousan agorān, kai erkhontai
and already(al)so was around fill-psv.partmarketplace and came 3p.pl
f.acc. f.acc.
....kērūkes
heralds (Xenophon Anabasis 2.1.7)

'And it was already around (the time that) the marketplace was filled and (=when) heralds came.'

(32) ēdā de ēn opse ... kai oi korinthioi prumnan ekrouonto
already then was late and the Corinthians stern beat.pst 3pp.

'It was already late and (=when) the Corinthians began to row astern.' (Thucydides 1.50)

(33) kai hama taut' elege kai apēiei
and immediately this he said and he went away

'As soon as he said this he went away'(Xenophon Hellenica 7.1.28)

What is a coordinate construction on the surface is not necessarily one in conveyed meaning, at least from the point of view of the translator trying to put the sense of the Greek sentence into an accurate and well-formed English paraphrase. Expression of the time relation between the clauses demands an explicit time adverbial, particularly to render the close succession of events in (33) indicated by hama. And then doesn't convey the close link of time, the overlapping of temporal reference or close succession of events in these sentences. Whereupon is more subordinating and perhaps closer in meaning to what is conveyed, but it is archaic. The subordinating time expressions As soon as, Immediately before/after, provide a wider and thus more accurate range of choices; though this may just be an accident of the English lexicon.

2.3

In English, Bolinger (1977) has noted a curious fact. Backwards

pronominalization apparently never occurs in coordinate structures. Yet in the following sentence it is possible to understand the pronoun and the full NP as coreferential and accept the sentence as well-formed, in a sort of conditional reading.

(34) He_i looks at me and $John_i$ goes wild.

Changing tense or the clause contents may alter acceptability.

(35) *He_i looked at me and $John_i$ went wild.

(36) *He_i looks at the wall and $John_i$ throws the ball at it.

It is well known that coordinate structures may convey, conversationally, temporal succession and cause-effect relationships between the clauses. Where the time reference is to future or generic time, in other words to non-actual events or states, the coordinate sentence also has the value of a conditional sentence. For example, (37) and (38) are similar

(37) Come one step further and I'll heave this pie at you.

(38) If you come one step further, I'll heave this pie at you.

The temporal order of utterance of the clauses and future tense reference to non-actual events approximate in a coordinate sentence what is explicitly conveyed in a conditional sequence subordinate clause-main clause. Backwards pronominalization appears to take place in (34) as though there were a real if conditional clause in first position. Either pronominalization is determined by some very abstract underlying relationship between clauses not preserved in surface structure, or pronominalization seems to take place by reference to some other related derivation with a structure like (34), in other words, by a transderivational constraint.[7]

3.0 Subordinate clauses no longer 'in construction' with a main clause

As subordinate clause contrasts with main clause, it also contrasts with independent clause, one not linked syntactically and intonationally with another clause. Modifiers of speech acts often have the properties of an independent clause grouped with another independent clause though they are introduced by subordinating conjunctions such as if and because. They may be intonationally separated from the speech act they modify but the conjunction at least serves as a semantic link.

German offers an interesting example of the 'loosening' of the bond between main and subordinate clause. The effects are shown in the main clause rather than the subordinate clause itself. In German, preposed adverbial triggers subject-verb inversion. The wenn clause in (39) and (40) is in initial or preposed position, but inversion has applied in (39) but not in (40).

(39) Wenn du mich brauchst , bleibe ich den ganzen Nachmittag
if you-fam. me need remain I whole afternoon

zu Hause.
at home

'If you need me, I will be at home all afternoon (in order to be of service)'.

(40) Wenn du mich brauchst, ich bleibe den ganzen Nachmittag zu Hause.

'If you need me, I will be at home all afternoon (I tell you this in case it becomes relevant)'

(Examples from Marcel Vuillaume, cited in Cornulier (to appear))
In (39), there is a cause-effect relationship expressed, that the speaker will remain at home in order to be available if the hearer should call. Subject-verb inversion has applied in the normal way in the main clause. In (40), in direct contrast, inversion has not applied, and there is a much more indirect and less causal relationship between the wenn clause and the contents of the main clause.

It is striking how closely the form of the sentence fits the function which the if clause performs, as modifier of a sentential constituent. In (39), the form of the main clause shows, by the presence of inversion, the connectness of the if clause to the main clause. By contrast, the lack of inversion in (40) implies less connectedness between the if clause and the main clause. In the first case, the if clause expresses an antecedent on the order of:

(41) If you light a match, the gas will explode.

while the second case is comparable to

(42) There are biscuits on the sideboard if you want them. (Austin 1970.212)

The if clause in (41) cannot be understood in the same way as in (42), if we assume that the speaker means what is ordinarily meant by such sentences (That is, we do not make the assumption that the speaker of (43) believes that the hearer has magical powers of telekinesis or is gifted with the ability to move things in response to wishes etc.). The if clause instead can be understood as a modifier of the whole speech act, rather than the propositional contents alone of the statement. In other words, the wenn clause modifies a larger constituent than the wein clause in (39) where inversion does take place. It also modifies a higher constituent. This difference may be perceived as a difference of degree of connectedness (cf. Williams 1975). Note that because clauses which modify speech acts must be intonationally demarcated from the main clause, while because clauses modifying lower constituents may be intonationally separate (Davison 1970, 1976).

4.0 Conclusion

The examples discussed in the preceding sections provide at least the beginnings of an answer to the two related questions which arise about

subordination: (1) are there degrees of subordination and (2) are there structures which are indeterminate between subordination and coordination (or whose 'real' structure is different from the surface structure)? The answer clearly lies in the interaction and combination of a number of different factors with properties which can be defined objectively to some degree at least. These factors can be associated with subordination, but not necessarily so; therefore when they are present they reinforce the qualities of subordination which native speakers are aware of and which linguistic tests reveal. When they are absent, a greater range of properties (in discourse) can be encoded by the structure in question. If such an explanation is available, it is not necessary to suppose that there is a single multi-valued and undefinable factor at work. (Or rather the definition would be circular, since it would be based on the cases which it is meant to explain.

4.1 Degrees of subordination

One of the principal tests for subordination involves negation or question in one conjunct. If the contents of the other clause can be in the scope of such a higher operator, the clause being tested is felt to be subordinate (cf. Kuno 1973:201-04). But if the clause is not within the scope of negation or question in another clause, there could be several reasons. Either the clauses are in a relation of coordination, or the clause being tested is semantically presupposed[8], by virtue of the presence of a specific lexical item, or more rarely a specific construction (such as a participial absolutes Having Verbed, etc.). Presupposition itself is a test for subordination; so far as I know, no coordinate structures or lexical items which occur in them stipulate that the complement is presupposed. Hence the scope relations and presupposition together create three values:

(44)

very subordinate	–	not so subordinate	–	coordinate
in scope of neg, Q not presupposed		not in scope of neg. presupposed		not in scope of neg.,Q not presupposed

I know of no structure which is both presupposed and in the scope of a higher negative or question particle.

If a structure is subject to Ross constraints on extraction rules, (Ross 1967) there is likewise no way of telling whether the construction is a coordinate structure or a complex NP. Many conjunctions which are felt on other grounds to be subordinating seem to constitute complex NPs. For instance, reason adverbials seem to be subject to Ross constraints (Davison 1970), whether or not they presuppose the truth of their complements; purpose adverbials are not:

(45)a. *What did John leave because he saw?

b. What did John leave early in order to see?

c. *What did John leave early because of seeing?

d. What did John leave early so that he might see?

Resistance to chopping rules, or being subject to Ross constraints, could be combined with the two factors above to yield even more degrees of subordination.

From a discourse or semantic point of view, the amount of shared material affects speakers' feelings about how closely connected two clauses are. Shared material is deletable, especially in languages which have zero anaphora or which favor application of deletion by identity rules. How much shared material it is possible to have is in turn determined by how much semantic material is expressed in a clause, how 'circumstantial' the clause is about time, place and other adverbials, how many arguments the verb takes, etc. So the larger and longer the clause, the harder it is for substantial amounts of it to overlap with the contents of another clauses, and the more likely it is to be perceived as less subordinate, less closely connected and conversely; cf examples (22) and (23). Length and shared material may interact with the syntactic features described above to yield even more degrees of subordination.

Size and shared material may even be an inherent feature of some types of subordinating conjunctions, and to be related to the kind of dominance facts mentioned in connection with examples (39) and (40). The wenn clause in (40) was described as modifying the speech act as a whole, and of being less closely connected to the main clause than the wenn clause of (39). It would also be described as modifying a larger structure, the utterance as a whole rather than the proposition asserted, and as being attached higher in the tree representing the utterance. One might say that time or purpose adverbials are likely to share more material with the main proposition than reason or adversative (although, etc.) adverbials. In the first category, subjects and time reference are likely to be alike or at least to be closely related and within the same topic or realm of discourse; in the case of reasons and contrastive clause, the clauses linked by such a conjunction need not shared much referential material. They can be linked by all kinds of tenuous connections of causality or contingent association. Time and reason adverbials do seem to be different, and reason adverbials are felt to be less subordinate than time adverbials, in both Japanese (McGloin 1972, Kuno 1973:209) and English (Davison 1976; Williams 1975).

Most of these factors vary independently but one can see how they could reinforce or contradict the simple structural facts of subordination. One of the least useful definitions of subordination is that it indicates 'dependency of thought'. However bad this is as an objective criterion, it nevertheless may be a true description. For example, the kind of subordination marked by a relative pronoun and proper inclusion serves to make a non-restrictive relative clause into a non-fact, though NRRC function as a separate and independent assertion or other speech act. For example, (46) is felt to represent one fact about Jerry rather than two:[9]

(46) Jerry, who likes photography, is spending the year in California.

(47) Jerry likes photography and he is spending the year in California.

(47), on the other hand, represents two facts about Jerry. Although it is not possible to make hard and fast statements about communicative purpose, we can go so far as to say that the use of a subordinate construction where

a coordinate construction might convey the same contents, often has the effect of making the material in the subordinate clause less salient.[10] So given information-propositions which are assumed to be true-ought to go normally in subordinate clauses. Likewise clauses might be felt to express given information if their contents overlap with what is expressed in another clause especially if the other clause is the one bearing markers of assertion or is marked as being higher in the phrase marker tree. What is structurally higher and more complex or less overlapping might therefore be considered more salient. The point I want to make here is that subordinate structure is compatible with lack of salience, given or presupposed information, and shared material. If these factors are present, subordinateness is reinforced, but they need not be present. If they are not especially apparent, the construction in question may bear some overt markers of subordination, but by contrast with other reinforced subordinate structures it will seem quite different, perhaps so different that it is indistinguishable from a coordinate structure. The complexities are therefore in semantic and discourse factors, and actually syntactic features a can make very little difference. (This point was made earlier in regard to structures in (6) and (7)).

4.2 Indeterminacy between coordination and subordination

These cases involve the 'unmarked' conjunctions I mentioned in earlier sections. These conjunctions place very few restrictions on the structures they link, by comparison with similar conjunctions. The restrictions have to do with presupposition, contents of the clauses and time and aspectual information (cf. Kuno's descriptions of special features of the Japanese conjunctions he compares (1973 passim)). The conjunctions may have the minimal properties of a subordinating conjunction; for example Hindi -kar and its analogue in other languages of India requies likeness of subject, Japanese -te/-i has subordinating properties when the linked causes share subjects, and French que occurs in a number of different environments as a marker of subordination, with other lexical items or alone. Greek kai on the other hand is normally a coordinating conjunction which may occur with coordinating particles of various kinds (te, de men etc.) or alone. So I would have to say that there is a difference, although a minimal one, in structure between subordinating and coordinating conjunctions.

In the case of the 'unmarked' conjunctions, however, it has virtually no consequences unless other factors are present. These can be present in a given discourse, and if they are, they determine the interpretation of the relations between the clauses. Hindi -kar is a good example of this, as the S -kar construction can be perceived as very subordinate, in fact hardly a clause in its own right, as a subordinate clause indicating a less salient event preceding a more salient one, or as a coordinate construction describing two salient sequential events-or possibly as in (20)-a salient event which precedes a less salient one. The emphatic particle in (20) suggests this interpretation, and in other cases it is the contents of the clauses unrelated to the conjunction, or discourse factors unconnected to the conjunction which determine what will seem subordinate.

Townshend and Bever's results (1977) suggest that subordination is not a single factor. The position of a clause affects recall time of its

constituents, particularly if the clause is subordinate (introduced by a temporal conjunction), but also if it is a main clause in a coordinate. In fact, the differences between preposed and postposed subordinate clauses seem greater than the differences between main and subordinate clauses, or subordinate and coordinate constructions. Their data do not support the notion that subordinate clauses in all positions are processed the same way by the hearer (and they note this point). Differences in memory processing would be expected if perception of subordination depends on the presence of many different interlocking factors; Kornfeld's (1973) preliminary data suggest that different kinds of subordinating constructions offer different kinds of cues (order, dominance relations, clause boundaries). If there are cases which are not clearly subordinate or coordinate it would indeed by surprising if there were not a number of different cognitive strategies for processing sentences. That is, if you don't know what it is, how do you know what to do with it? Clearly, however, the presence of a sentence initial conjunction unambiguously signals a preposed subordinate clause, which must be held in temporary memory until the next clause boundary is reached. Here one would expect a clear difference of processing between subordinate and main clauses, as Townshend and Bever's data show. Elsewhere there are bound to be ambiguities, and unclear experimental results.

I think I have demonstrated that syntactic properties of subordination and coordination cannot be divorced from semantic and pragmatic features. The structural relations, unequal and asymmetrical command relations, for example, are directly related to scope of negation, modals and markers of illocutionary force, while function of a subordinate clause is closely bound up with the grammatical role it plays in the matrix sentence. Its contents may be reduced and impoverished, or very detailed and salient, and these properties will reinforce or override subordinateness. There is a small core of mainly syntactic properties which may--at least by definition--distinguish subordination, but these do not necessarily entail the rest. Individual lexical items may, and if so it is not to be considered strange that individual lexical items might have to be enumerated as subordinating or coordinating.

It is not necessary, however, to mark lexical items like conjunctions as being strongly or weakly subordinating. It is necessary only to mark them for features which would be represented in any case, for 'presupposition', meaning class, etc., and some minimal syntactic information. Since these features are linked in various ways to subordination or lack of it, they will interact with clause contents to produce effects of greater or less subordination, as many degrees as there are distinct combinations of factors. So the observations about degrees of coordination and subordination, and of indeterminacy can be considered facts about languages, but no longer mysteries.

The anomalies of subordination which I have treated in this paper seem to respond to a conservative rather than a radically new handling in linguistic description. This means that it is not necessary to place more complex conditions on lexical insertion for conjunctions, nor to add more complex information to the structural description of rules such as Equi or Subject-Verb inversion. No special and arbitrary conventions of interpretation are needed either, for special aspectual meaning or for getting

the right degree' of subordination. The meanings which do not fall directly out of the meanings and grammatical relations of the sentence structure are induced by ordinary conversational implicature (cf. Grice 1975) and by a natural extension of Gricean maxims, which I have called Markedness, and which basically rests on the older notion of paradigmatic opposition. That is, where choices are possible, the choice made may mean something in itself; this is a realization of Gricean maxims of Relation and Manner.

NOTES

This paper was presented as a Linguistics department colloquium at the University of Illinois. Many thanks to Benoît de Cornulier for improving criticism. I am grateful to R. Pandharipande and S. Makino for information about Hindi and Japanese respectively; as linguists, however, they do not necessarily agree with my interpretations of the data.

[1]Allaire (1973:21) objects to the notions of subordination which include semantic or psychological information, and which therefore allow interminate or variable cases, particularly context-dependent ones. 'Le problème de la subordination ne sera pas pour nous un problème psychologique, mais essentiellement un problème grammatical qu'il faut apprécier comme tout problème de langue, en termes d'économie des indices et non en termes de contenu.'. While I can see the usefulness of this view for her study of transcripts of radio broadcasts, I have not taken it here; I find it difficult to make a clean separation between syntactic and other facts, on the one hand (see section 4), and I feel that such a view blinds one to interesting facts. It is hard to get at the nature of subordination without looking at some strange or anomalous cases.

[2]S. N. Sridhar tells me that Kannada also allows a few cases of subject deletion where subjects are unlike, in cases where weather is referred to. Kannada has a conjunctive participle like Hindi -kar, to be discussed, both of which are similar to -te in many respects.

[3](15) and (16) are based on sentences and judgements obtained from R. Pandharipande.

[4]Unpublished research on zero anaphora in conjoined clauses which I have done on Hindi shows that the -kar construction, with deletion of the first subject N, is preferred over a conjoined construction with aur 'and', pronominalization or deletion of the second (agentive) NP subject, unless negation occurs in the first clause.

[5]Various pragmatic factors would influence the interpretation. A -kar construction with very little detail in it, just a verb perhaps, would be more likely to receive the adverbial interpretation. Knowledge of the world also intervenes; it is likely that running and going would not be interpreted as being sequential in (21), though other cases are potentially ambiguous. For example:

i)	us - nee	sooc - kar	kaam	kiyaa	'He/she did the work carefully
	3ps. erg.	think-perf. prtcple.	work	do-perf.	'He/she thought and then did the work'

S. N. Sridhar tells me that this is the case in Kannada. Japanese also allows conditional uses (with mo 'even (if)' (Takahara 1973:104) and adverbial uses 'by Ving' (Tamori 1977:335).

[6]Kantor and Jeffers (1976) suggest that the Sanskrit counterpart of -kar evolved from a construction closely resembling infinitive forms (hence subordinate), and expressed at first presupposed information, like an absolute construction. In Classical Sanskrit it can be used for new, non-presupposed information as well--its contents could be in the (semantic) scope of an optative for example. The gerund expressed consecutiveness of events, as in Hindi -kar constructions; like subjects are almost invariably required.

[7]On the other hand, (34) is conditional only by conversational implicature. The reference to non-actual time--to generic events rather than specific single existent events--and the normal implicature of a temporal and causal relation between the clauses (cf. Schmerling 1975) what is expressed by a conditional sentence. But (34) does not have all the properties of a conditional clause. Negative polarity items can occur in positive or negative conditional clauses, marked with if, but not in clauses conjoined with and like (34):

i) ??Anybody gives a damn about him_i and $John_i$ gets uncomfortable.

ii) If anybody gives a damn about him_i, $John_i$ gets uncomfortable.

iii) ??He_i wants to Ø and Jim_i will buy a boat.

iv) If he_i wants to Ø, Jim_i will buy a boat.

v) ??Yesterday, he_j looks at me and $John_i$ goes wild.

Deletion by identity can occur in conditional clauses which are preposed and thus in initial position, (iv), but backwards anaphoric deletion does not occur in coordinate constructions, even ones like (34) such as (iii). Sentences using the historical present to refer to a specific event, such as (v) also do not allow backwards pronominalization.

A transderivational constraint, of the type proposed in Gordon and Lakoff (1971) would have to be very selective and arbitrary, to map (34) onto some conditional clause. I suspect that Bolinger (1977) is correct in suggesting that pronominalization is freer than was previously thought, and I suppose that the pronominal freedom and conditional effect come from the same factor, the open or generic time reference in (34).

[8]I am using the term loosely.

[9]Peter Cole suggested this distinction to me.

[10]Thus subordination is very useful in separating out kinds of information, in ordering it in terms of discourse priority, and encoding very precisely the relations between clauses. Writers like Curme (1931) may exaggerate when they praise the supposed invention of subordination in addition to parataxis and coordination, but they are correct in feeling that it has

its uses; not the least to express ideas which need not be believed by the speaker.

REFERENCES

ALLAIRE, Suzanne. 1973. La subordination dans le français parlé devant les micros de la Radiodiffusion. Rennes: Université de Haute Bretagne, C.N.R.S.

ANDERSSON, Lars-Gunnar. 1975. Form and function of subordinate clauses. Gothenburg Monographs on Linguistics No. 1. U. of Göteborg, Department of Linguistics.

AUSTIN, J.L. 1970. Philosophical papers. J.O. Urmson and G.J. Warnock, eds. Second edition. Oxford: Clarendon Press.

BAILEY, T. Grahame. 1956. Urdu. London: English Universities Press.

BEVER, Thomas. 1970. The comprehension and memory of sentences with temporal relations. In D'Arcais and Levelt, eds. Advances in Psycholinguistics, Amsterdam: North Holland Publishing Co., 285-93.

BOLINGER, Dwight. 1977. Pronouns and repeated nouns. Indiana Linguistics Club.

CHEVALIER, J. C. et al. 1964. Grammaire Larousse du français contemporain. Paris: Librairie Larousse.

DE CORNULIER, Benoît (to appear) Meaning detachment. In F. Kiefer and J. Searle, eds. Speech act theory and pragmatics. Dordrecht: North Holland Publishing Co.

CURME, George O. 1931. Syntax. A grammar of the English language. Vol. III. Boston: D. C. Heath.

DAVISON, Alice. 1970. Causal adverbs and performative verbs. Papers from the 6th CLS meeting, 190-201. Chicago: University of Chicago, Department of Linguistics.

_____. 1976. Insubordinate clauses. Paper presented at the 1975 winter LSA meeting.

EMONDS, Joseph. 1971. Root and structure preserving transformations. M.I.T. dissertation.

GOUGENHEIM, Georges. 1939. Système grammatical de la langue française. Paris: J. L. L. d'Artrey, A. Ponteix d'Artrey.

GORDON, D. and G. Lakoff. 1971. Conversational postulates. Papers from the 7th CLS meeting, 63-84. Chicago: Department of Linguistics, University of Chicago.

GREEN, Georgia. 1976. Main clause phenomena in subordinate clauses. Language 52. 382-97.

GREVISSE, M. 1953. Le bon usage. Fifth edition. Gembloux: Editions J. Duculot, Paris: Librairie orientaliste Paul Geunther.

HALLIDAY, M. A. K. and Ruqaiya Hasan. 1976. Cohesion in English. London: Longmans.

HOOPER, Joan and Sandra A. Thompson. 1973. On the applicability of root transformations. Linguistic Inquiry 4. 465-98.

JESPERSEN, Otto. 1940. Modern English grammar. Volume V. London: George Allen and Unwin, Copenhagen: Ejnar Munksgaard.

KANTOR, Robert and R. Jeffers. 1976. A history of the Sanskrit gerund. Paper presented at the 1976 winter LSA meeting.

KORNFELD, Judith. 1973. Syntactic structure and the perception of sentences: some evidence for dominance effects. CLS parasession volume, 372-86. Chicago: University of Chicago, Department of Linguistics.
KUNO, Susumu. 1973. The syntactic structure of Japanese. Cambridge: M.I.T. Press.
LONGACRE, Robert. 1970. Sentence structure as a statement calculus. Language 46.783-815.
LE BIDOIS, G. and R. Le Bidois. 1968. Syntaxe du français moderne. Paris: Editions Auguste Picard.
LINDHOLM, James. 1975. The conceptual basis of the Tamil adverbial participle. University of Chicago dissertation.
MCGLOIN, Naomi Hanaoka. 1972. Some aspects of negation in Japanese. University of Michigan dissertation.
MORGAN, Jerry L. 1978. Two types of convention in indirect speech acts. In P. Cole, ed. Syntax and semantics, Volume 9, Pragmatics. 261-80. New York: Academic Press.
OSGOOD, Charles and S.N. Sridhar. 1978. Unambiguous signalling of naturalness in clause ordering: a language universal? Paper presented at the University of Illinois Linguistics Seminar.
POUTSMA, Henrik. 1926. A grammar of late modern English. Part II, section II, The verb and the particles. Groningen: P. Noordhoff.
ROSS, J.R. 1967. Constraints on variables in syntax. M.I.T. dissertation.
SCHMERLING, Susan. 1975. Asymmetric conjunction and rules of conversation. In P. Cole and J.L. Morgan, eds. Syntax and semantics, Volume III, Speech acts. 211-31. New York: Academic Press.
SMYTH, H.W. 1956. Greek grammar. Revised edition. Cambridge: Harvard University Press.
TAKAHARA, Kumiko. 1973. Tense agreement between the VP and the underlying 'and' in a compound sentence. Papers in Japanese linguistics 2:2.102-32.
TAMORI, Ikuhiro. 1976-77. Semantics and syntax of the Japanese gerundive and infinitive. Papers in Japanese Linguistics 5:307-60.
TOWNSHEND, D.J. and Thomas Bever. 1977. Main and subordinate clauses: a study in figure and ground. Indiana University Linguistics Club.
VON WARTBURG, W. and P. Zumthor. 1947. Précis de syntaxe du français contemporain. Berne: Editions A. Francke, S.A.
WAGNER, R.L. and J. Pinchon. 1962. Grammaire du français classique et moderne. Paris: Librairie Hachette.
WILLIAMS, Edwin. 1975. Small clauses in English. In J. Kimball, ed. Syntax and semantics, Volume 4. 249-73. New York: Academic Press.
ZIV, Yael. 1976. On the relevance of context to form-function correlation. (An examination of extraposed relative clauses). CLS Functionalism parasession, 568-79. Chicago: University of Chicago, Department of Linguistics.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

THE SOCIOLINGUISTIC VARIABLE (s) IN BENGALI: A SOUND CHANGE IN PROGRESS?*

Charles A. Ferguson
Stanford University

Afia Dil
United States International University

In recent years William Labov has identified phonological variables such as the variable (r), the degree of implementation of post-vocalic /r/ in the English of New York City, and in a series of studies has shown their importance for understanding the social functioning of language and the mechanisms of linguistic change (Labov 1972).[1] The present paper identifies a phonological variable of this kind in Bengali: the variable (s), the phonetic range of sibilance, and shows the value of extensive study of the phenomenon.

A number of phonological studies of Bengali have discussed the status of the sibilants in Bengali. Chatterji 1926 provided a considerable amount of basic data, including historical material; Ferguson and Chowdhury 1960 gave additional data and an interpretive summary of the situation; Chowdhury 1960 included several acute observations on the sibilants; and, finally, Dil 1972 gives new data and examples.

The languages of South Asia have relatively few fricatives in their sound inventories, and in many instances the only fricative is a single sibilant. However, three types of sibilants occur in the area, and South Asian writing systems generally have separate symbols for them regardless of the phonology of the spoken languages. The three types will be referred to here, following traditional Indic terminology, as dental, palatal and retroflex, and symbolized as s, ś, ṣ, respectively. The first of these is similar to English s and the second and third to varieties of English sh; the symbols s and š will be used here for these two basic types in English and other languages. No attempt will be made to specify the phonetic details beyond this. For a summary of sibilant oppositions in South Asia, cf. Ramanujan and Masica 1969, 567-8; for the difficulties in phonetic specification of these sounds cf. Ladefoged, 47-9.

In historical studies of Indo-Aryan languages, the status of the sibilants has often been taken as one of the crucial indicators of historical relationship. Thus, for example, the East Magadhan language from which modern Bengali, Assamese, Oriya, and the Bihari languages are descended, differed from other contemporary Indo-Aryan languages in that the three sibilant phonemes of Sanskrit had merged into a single sibilant phoneme pronounced as a palatal "shibilant" except where it was assimilated to neighboring sounds (Chatterji 1926, Pattanayak 1968). It seems likely that variation in the pronunciation of sibilants has been a focal point of language change throughout the history of Indo-Aryan languages from earliest times to the present. It is also likely that variation in sibilance has been a marker of social differentiation in these languages during the same period, but evidence for this is less clear and it has not been the subject of much philological or linguistic study. A

thorough investigation of the situation in Bengali may be of value in the study of South Asian languages in general by suggesting patterns of sociolinguistic change at other times and places on the subcontinent, and it may have even broader significance for sociolinguistic theory.

Most linguistic, phonetic and pedagogical studies of Bengali deal primarily with Standard Colloquial Bengali (SCB) and pay relatively little attention to the great range of regional, social and communal variation. Although this procedure has some disadvantages in that it tends to obscure certain historical and synchronic relationships among the dialectal varieties, it is nevertheless convenient both because Standard Colloquial is the accepted norm for educated conversation throughout the Bengali-speaking world and because it is the best described variety of the language. The central facts of SCB sibilance are quite clear: the SCB sibilant /ś/ has the dental pronunciation [s] before certain dental obstruents, notably /t r/ and tauto-syllabic /n l/, while elsewhere, i.e. before other consonants, vowels, or boundaries, it has the palatal pronunciation [ś]. A more detailed phonetic specification of the two Bengali variants is given in Kostić and Das 1969, 210-22. In addition to these central facts, there are many subsidiary details of variation which at times may even obscure the central facts. The nature of the subsidiary variations will be discussed below under five principal factors: 1) orthoepy, 2) learned borrowings, 3) foreign language interference, 4) regional provenience, 5) communal identity, and 6) social status.

1. Orthoepy. The Bengali writing system has separate graphemes for three sibilants: <s> /dɔnto ś ɔ/ 'dental s', <ś>/talɔbbo ś ɔ/ 'palatal s', and <ṣ>/murdhonnaś ɔ/ 'retroflex s'. In Bengali spelling these are rarely interchangeable. Most words have only a single acceptable spelling of sibilants and this spelling is in general etymological, reflecting the spelling of Sanskrit etyma. As may be expected from the central facts of SCB pronunciation, the spelling poses a problem for Bengali school children, and considerable effort is expended to inculcate correct spelling. The discrepancy between orthography and pronunciation is at least marginally relevant to the description of the phonological variable of sibilance in that some speakers on some occasions attempt to "correct" their pronunciation to bring it into agreement with the spelling. This generally means that some attempt is made to distinguish between the dental and palatal sounds. Less effort is put on distinguishing palatal and retroflex, probably because the retroflex letter is rarer than the other two and commonly occurs in clusters, e.g. <ṣṭ>, in which no contrast is possible with another sibilant in traditional spelling and contrast in pronunciation is possible only marginally in Arabic/English loanwords. This attempt to make one or more distincitons in "correct" speech which are absent in ordinary language use is, however, relatively unimportant since only very few people attempt it (puristic teachers, Sanskrit scholars, etc.) and even those who do try it actually do so only on certain occasions and with limited success.[2]

Perhaps of somewhat greater significance is the fact that a distinction is generally made in the spelling of foreign words, such as proper names or actual loanwords. Thus, for example, a word borrowed from English which is spelled with "s" in English and is so pronounced in English will normally be spelled with a dental<s> in Bengali, while one spelled with "sh" and so pronounced will be spelled with a palatal<ś>. More on this phenomenon in the following sections.

One other detail of pronunciation may be noted here under orthoepy. Speakers of SCB sometimes use the [ś] variant before a dental obstruent at a grammatical boundary so that in some styles of pronunciation some speakers would distinguish between aste 'slowly' with [s] and as-te 'to come' with [ś]. This varies along some orthoepic dimension such as 'carefulness of speaking' but may be affected by other factors as well.

2. Learned borrowings. The Bengali lexicon contains many learned borrowings from Sanskrit, so-called 'tatsamas' and 'semi-tatsamas', which are more or less well integrated into the phonological system. Many of these learned borrowings have phonotactic characteristics, such as consonant clusters, which do not obey the constraints of the ordinary vocabulary of the spoken language ('tadbhavas'). This phenomenon is of particular interest for the (s) variable because a number of learned borrowings have initial s-clusters not found in tadbhava vocabulary, and the educated speakers of Bengali who make use of these words normally pronounce them with [s]. Examples include skɔndho 'shoulder', skɔndho 'fall', spɔṣto 'clean'.

3. Foreign language interference. It is not possible to provide a reliable estimate of the number of native speakers of Bengali who speak one or more other languages in addition. Weinreich's analysis of Indian bilinguals on the basis of the 1961 census (Weinreich 1957) suggested that Bengal as a whole may be less bilingual than other areas in South Asia, but whatever the exact figures on multilingual Bengalis in India and Bangladesh, the use of English and Urdu (or "Bazaar Hindustani" or some other variety of the family of languages and dialects referred to as Hindi), is widespread among them. The knowledge of these two foreign languages is related to the pronunciation of sibilants in Bengali.

Both English and standard Hindi and Urdu have an s-š opposition, quite prevasive, of high functional load, and only rarely neutralizable in English and of similar though somewhat less salience in Hindi-Urdu. Also, some Eastern varieties of Hindi have only a single sibilant which is s-like in phonetic value. Accordingly, many Bengali speakers use the source-language sibilant in at least some of the loanwords of whose provenience they are aware. For example, a common Bengali word for 'movies' is /sinema/ which many Bengalis pronounce with English [s] either very often or always, while other Bengalis will pronounce a Bengali [ś]. Any estimation of the extent of this kind of influence from English is very difficult. Since English is taught as a subject in nearly all secondary schools, is the medium of instruction in some schools, and is an important language in higher education, government, commerce, technology and many domains of language use, it might be expected that some preliminary estimates could be made by compiling educational statistics. Even such preliminary estimates would, however, be of little value because one must consider the variety of English spoken in the various settings of English use (cf. Kachru 1969). Some Bengalis carry over into their English essentially the central facts of Bengali sibilant pronunciation, thus having no effective contrast between /s/ and /š/. Others are aware of the contrast in English and use it sporadically or in certian speech styles. An individual observed by one of us made no distinction in normal

use in his English although he had an s-š distinction in his Urdu and knew there should be such a distinction in English; he would exemplify the English distinction by pronouncing the two words see and she when this was a matter of discussion, but not otherwise. It is not at all unlikely that individuals may have several styles or registers in both Bengali and English reflected in differential pronunciation of the sibilants. Clearly the situation is very complex but it seems likely that the pronunciation of sibilants in English loanwords in Bengali would turn out to be an excellent indicator of such dimensions as amount of education, identification with "modernizing" trends, and the like.

The situation with regard to Urdu loanwords is somewhat different and will be discussed in more detail in Section 4, but it may be noted here that Bengali-Urdu bilinguals are particularly likely to keep their s-š distinction in the pronunciation of Urdu loanwords of Perso-Arabic origin, especially proper names and expressions related to religion, and this has extened far beyond bilingual usage to be identifiable as a feature of Muslim Bengali (Dil 1972).

4. Regional provenience. Millions of Bengalis grow up learning to speak a variety of languge which is very close to or identical with SCB, but probably most speakers of the language acquire first a regional dialect which varies in many significant respects from SCB. Although local dialects tend to be readily intelligible to neighboring dialects, the extremes of dialect variation within the Bengali-speaking world may be intelligible only with the greatest of difficulty. A full description of the sibilants of local dialects would go far beyond the range of this study but some factors must be noted. An educated Bengali's pronunciation of SCB may have a regional coloring related to the local dialect so that even though he is very fluent in handling the Standard form, the careful observer can detect his region of origin, and the pronunciation of sibilants is one of the most useful diagnostic features in this.

The palatal pronunciation of the sibilant was mentioned above as a characteristic of Bengali and closely related languages. In some dialect areas of Bengali, however, sound changes have occurred which have altered this picture considerably. For example, throughout quite a large territory in East Bengal the original sibilant in initial position, and to some extent in other positions, has either become the simple aspirate /h/ or has disappeared completely. In dialects where the sibilant has undergone this change, a new sibilant phoneme has arisen from the voiceless, aspriated, palatal affricate /ch/. In these dialects typically the palatal affricates have become more dental so that the original unaspirated /c j/ are pronounced [ts dz] while the voiceless aspirate has become [s]. The details vary considerably from place to place but this pattern is typical (Chatterji 1926; Ray et al 1966; Goswami 1961).

For speakers of these dialects the acquisition of the Standard Colloquial as the superposed variety required for education, formal public use and the like results in a range of variation in sibilant phonetics quite different from that of dialects whose phonology is more like that of SCB, and it seems likely that their pronunciation of /c ch j s h/ would

turn out to be an excellent indicator of degree of mastery of SCB and amount of regional identification. Since the majority of the speakers of these dialects are Muslims this regional factor is in part confounded with the communal factor described below.

5. Communal identity. The Bengali-speaking world is, apart from a very small minority, divided into a Hindu community and a Muslim community. Even if an individual Bengali has no strong personal commitment to Hinduism or Islam he is still unmistakably marked in many ways as belonging to one or the other. For exampl, Hindus typically have family names and one compound given name, while Muslims typically have no family name and from three to six given names, and almost all Bengali given names are distinctively Hindu or Muslim. Although there is a strong common core of shared Bengali language and culture, there are pervasive differences between the two communities. Hindu and Muslim Bengalis share a common Bengali language, fundamentally the same in phonology, syntax and lexicon, but there are substantial lexical differences, for example, in kinship terms, in greetings and titles, in expressions relating to food and clothing, and in other semantic areas where there are behavioral differences between the two communities (Dil 1972). One typical pattern of lexical difference is to have a Common Bengali term used by both communities and one or more Muslim variants of the term commonly used by the Muslim community but little used or even unknown among Hindus (e.g. Common Bengali/ḍim/, Muslim/anḍa/ and/bɔeda/, 'egg'). Another pattern is to have two completely different expressions because the objects named differ (e.g. the items of clothing, Hindu/dhuti/, Muslim/luṇgi/). In a few instances there are simply two words for the same thing, one Hindu and one Muslim, known to both but used communally (e.g. Hindu/jɔl/, Muslim/pani/, 'water').

In phonology the most striking communal difference is in the pronunciation of sibilants. The Bengali language has a number of words of Perso-Arabic origin which have come into the language, often by the indirect route of Urdu. Many of these words are completely naturalized in Bengali and are used without communal identification. Some are, however, chiefly used by Muslims, and most of the Muslim lexical variants in Bengali are of Perso-Arabic origin. In many Perso-Arabic lexical items such as proper names, certain high frequency words, and items referring directly to religion, Muslim speakers typically have a phonemic difference between /s/ and /ś/. They also have an independent /z/ phoneme in words of this kind, while for Hindu speakers [z] occurs only as a variant of /j jh/ before dentals in casual speech.

The Hindu-Muslim communal difference in sibilance (i.e. the presence of additional /s z/ phonemes in Muslim variants), is heavily loaded with social significance and very resistant to change even when the attempted change is in the direction of orthoepy. For example, a Muslim speaker may find it impossible to use the [ś] pronunciation in a Common Bengali word if the Muslim pronunciation has [s], and the Hindu speaker may find it very difficult to produce the [s] pronunciation in a word when his knowledge of the orthography or foreign provenience would recommend it. In large part these reactions are unconscious, but sometimes they may be made explicit.[3] Clearly this is a fruitful area for investigation of a phonological variable of social significance.

6. Social status. Linguistic variation related to social stratification is widely attested in South Asian languages and has been given systematic treatment by a number of linguistis, as in the now classic paper Gumperz 1958, and the articles collected in Ferguson and Gumperz 1960. Most of these studies have used caste stratification as the principal social variable, but recent studies are beginning to pay more attention to the relation between degree of education and caste ranking in speech behavior, e.g. Pandit 1969. For Bengali, there have been almost no studies of language attitudes (Mukherjee 1976, Singh 1976). Because of the lack of information, it is impossible to discuss social variation in sibilance with any precision. On the basis of casual observation by the two authors, however, one important remark can be made: in a variety of settings, rural and urban, dental [s] pronunciations are used for SCB palata [ś] by speakers of lower socioeconomic status, and efforts are made in classrooms and other prescriptive settings to alter this pronunciation toward the Standard. It seems that this dental pronunciation represents an incipient sound change, by which the historical palatal sibilant is becoming a dental one. This change probably reflects a "language universal" in the sens of a phonological tendency likely to appear at any time when the conditions make it possible. The universal may be stated as follows: When there is only one sibilant phoneme in a language, its principal allophone or clarity-norm variant will tend to be [s]- like, i.e. alveolar, with relatively high-pitched noise in the spectrum (Jakobson 1968, 55). Accordingly, if, by some kind of sound change, the only sibilant in the language has come to be palatal, retroflex, labialized or in some other way phonologically marked, this sibilant will tend to be replaced by something more like a simple [s]. This sound change in Bengali, if it is taking place, would be working its way up from lower social strata, i.e. it would be a change 'from below' like the raising of front vowels in New York English (for general discussion cf. Labov 1972, Ch 9).

Conclusions

The kind of sound change represented by Bengali *š* > *s* should be recognized as a common type of change[4] and carefully investigated where it seems to be in operation. The distinguishing characteristics of the type are three:

a) A phonetically 'marked' phoneme, which has somehow arisen in a language, loses its marking; it either merges with its unmarked counterpart in the language or it changes its phonetic value without merger.

b) The change begins in a relatively low social stratum and spreads throughout the community.

c) The change is stigmatized by speakers of a prestige dialect, and the normative influences of education and social advancement work against the change.

An almost exact parallel sound change is the shift of interdental fricatives to stops (θ>t, ð>d). The interdentals are marked and when they come into

existence in a language they tend to be replaced by the less marked stops as has happened in Arabic and other Semitic languages and in most of the Germanic languages. This change seems to be taking place in contemporary English. The process has been best described for New York English, where the stop values are most frequent in lower middle class pronunciation and in casual speech and are heavily stigmatized (Ferguson 1978).

Research on the Bengali phonological variable (s), the phonetic range of sibilance, is promising both for the linguist who wants to understand the processes of sound change and for the social scientist who wants to understand Bengali social change. Such research would

(a) Provide insights in the distribution of social forces and the processes of social change in Bengali society. The (s) variable is a sensitive indicator of the influence of education, the degree of regional and communal identification, and the routes of modernization.

(b) Deepen our understanding of linguistic change by observing the interaction of opposing phonological trends. One (ś>s) is a universal tendency based ultimately on the shape and functioning of the human vocal tract and universal features of language processing and communication systems, and the other (s>ś) is a particular tendency based on lines of prestige. cultural innovation, and standardization operating within the Bengali-speaking world.

NOTES

*This paper was originally written in 1972; it was revised in summer 1978, with the benefit of comments from Udaya Narayan Singh and Yamuna Kachru.

[1]For clarity of presentation phonemic transcriptions are enclosed in slant lines /s/, Bengali graphemic transcriptions in angle brackets <s>, English orthography in double quotes "s", and phonetic transcriptions in square brackets [s].

[2]Similar phenomena are found in many literate speech communities throughout the world. Other examples from Bengali include the attempt to pronounce aspirated consonants in cases where the aspiration is either optionalor totally absent in the spoken language.

[3]This same kind of resistance to change across a communal difference may be seen in the Bengali variable (r), the presence of contrasting /r ṛ/ in Hindu Bengali and their merger to /r/ in Muslim Bengali (and in some regional varieties of Hindu Bengali). Muslim speakers who lack the r-ṛ distinction find it difficult to perceive and produce this difference despite its presence in the orthography and acknowledged correctness in the Standard. In both the (s) and (r) variables the communal difference is complicated by regional and social factors, but it is nevertheless highly significant.

[4]Kroch 1978 offers a description of this kind of change and seems to regard it as the principal type of sound change. Kroch's description is very useful, but it seems unlikely that this is the predominant type of sound change. Some innovations are not stigmatized, prestigious groups may be linguistically innovative (Labov 1972, ch. 9), and sound change need not be 'natural' (Ohala 1978).

REFERENCES

CHATTERJI, Sumiti Kumar. 1926. Origin and development of the Bengali language. Calcutta University Press.

CHOWDHURY, Munier. 1960. The language problem in East Parkistan. In Ferguson and Gumperz, eds: Linguistic Diversity, 64-78.

DIL, Afia. 19/2. Hindu and Muslim dialects in Bengali. Unpubl. Ph.D. dissertation, Stanford University.

FERGUSON, Charles A. 1978. Phonological processes. In J.H. Greenberg et al., eds: Universals of human language, Vol.1. Stanford, CA: Stanford University Press.

FERGUSON, Charles A. and Munier Chowdhury. 1960. The phonemes of Bengali. Language 36.1:22-59.

FERGUSON, Charles A. and John J. Gumperz, (eds). 1960. Linguistic Diversity in South Asia. (International Journal of American Linguistics 26.3 Pt III)

GOSWAMI, Krishnapada. 1961. Sibilants and glottal fricative 'h' in North-East Bengal dialects. Bulletin of the Philological Society of Calcutta. 2:108-9.

GUMPERZ, John J. 1958. Dialect differences and social stratification in a North Indian Village. American Anthropologist. 60:668-81.

JAKOBSON, Roman. 1968. Child language, aphasia and phonological universals. The Hague: Mouton.

KACHRU, Braj. 1969. English in South Asia. In Thomas Sebeok, ed: Current trends in linguistics, Vol.5:627-78. The Hague: Mouton.

KROCH, Anthony S. 1978. Toward a thoery of social dialect variation. Language in Society 7:17-36.

LABOV, William. 1972. Sociolinguistic patterns. Philadelphia: University of Pennsylvania Press.

LADEFOGED, Peter. 1971. Preliminaries to linguistic phonetics. Chicago and London: University of Chicago Press.

MUKHERJEE, Aditi. 1976. An inter-dialectal attitude survey of some dialects of Bengali. Papers in Linguistic Analysis (Delhi) 1:84-93.

OHALA, Manjari. 1978. Conflicting expectations for the direction of sound change. Indian Linguistics 39:25-28.

PANDIT, P.B. 1969. Parameters of speech variation in an Indian community. Transactions of the Indian Institute of Advanced Study 8:207-229.

PATTANAYAK, D.B. 1966. A controlled historical reconstruction of Oriya, Assamese, Bengali and Hindi. The Hague: Mouton.

RAMANUJAN, A.K. and Colin Masica. 1969. Toward a phonological typology of the Indian linguistic areas. In T.A. Sebeok, ed: Current Trends in Linguistics, Vol.5:543-577. The Hague: Mouton.

RAY, Punya Sloka, Muhammad Abdul Hai and Lila Ray. 1966. Bengali language handbook. Washington, D.C.: Center for Applied Linguistics.

SEN, Sukumar. 1955. The caste dialect of the Mucis in South-East Burdwan. Indian Linguistics 16:16-20.

SINGH, Udaya Narayana. 1976. Diglossia in Bengali: a study of attitudes. Papers in Linguistic Analysis (Delhi) 1:94-99.
WEINREICH, Uriel. 1957. Functional aspects of Indian bilingualism. Word 13:203-33.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

RULE ORDERING VERSUS GLOBALITY: EVIDENCE FROM THE INVERSION CONSTRUCTION*

Gabriella Hermon

In this paper I consider the theoretical implications of non-nominative subject (inversion) constructions cross-linguistically. I present evidence from the Inversion construction that there are certain cases of rule interaction which are better handled by rule ordering than by global conditions on rules.

I. Introduction

In recent work in the framework of non-derivational Relational Grammar (as in Perlmutter's forthcoming papers) and Arc-Pair Grammar (Postal and Johnson, forthcoming), certain global devices have been proposed to handle cases of rule interaction which were typically handled by rule ordering in a derivational framework.[1] In this paper I will examine one such case having to do with the rule of Inversion (in the sense of Harris (1978) and Perlmutter (1978)). I will show, by examining data from Imbabura Quechua and Icelandic, that the global approach leads to contradictory statements with regard to the structural (or more accurately, relational) descriptions of certain rules interacting with Inversion. Those cases, then, are evidence that there are certain instances of rule interaction which cannot be handled by globality and need to be handled by rule ordering. Let us turn now to the construction from which I draw my data in this paper. There are certain experiencer constructions such as (1) in Georgian:

(1) Georgian experiencer construction

gelas	uqvars	nino
Gelas-dat	him-loves-she	Nino-nom

'Gelas loves Nino.'

where the dative experiencer, gelas, (henceforth, the inversion nominal) seems to have certain subject properties. Thus, according to Harris (1978) the inversion nominal gelas can undergo rules only subjects undergo in Georgian; it triggers tav- reflexivization and controls third person number agreement; whereas the nominative nominal nino has the characteristics of a non-subject with respect to the above rules. The inversion nominal behaves as an indirect object with respect to the rules of person agreement and case marking, while the nominative nominal has the characteristics of a final subject with respect to these rules.

Harris (1978), Perlmutter (1978) and Cole and Jake (1978), inter alia, have claimed that a rule of inversion is involved in the derivation of sentences like (1). The rule basically demotes the underlying subject (the inversion nominal) to an IO, thereby creating a stratum without a subject (without a 1-arc in APG parlance). The advancement of the underlying DO to subject is achieved by unaccusative advancement (which applies automatically to any stratum not having a subject). Thus, we get a final stratum with a (nominative) subject (the underlying DO) and an IO (the underlying subject).

There seem to be two major ways of handling the interaction of inversion with other relation changing rules of the grammar (independently of whether we work in a derivational or non-derivational framework). One way is by rule ordering: by ordering inversion in the derivation after the rules which treat the experiencer as a subject and before the rules treating the experiencer (inversion nominal) as an IO. Thus, in Georgian, Inversion will have to be ordered after tav- reflexivization and third person number agreement (as these rules treat the experiencer as subject) and before person agreement and case marking (which treat the experiencer as an IO). This is, in fact, the way Harris (1976) (for Udi), and Cole and Jake (1978) (for Imbabura) handle Inversion.

A radically different treatment is found in Harris (1978) and Perlmutter (1978). In these recent works, in order to avoid rule ordering, the Inversion facts are handled by attaching global conditions which refer not only to the relational status of some NP X at the level or stratum when the rule applies, but which refer to the earlier or later status of that NP as well. This definition of global applies to both derivational and non-derivational grammar. (In a non-derivational grammar one can refer to initial and final strata, as well as strata with lower or higher coordinates.)

In general, rules treating the inversion nominal as a subject (for example, tav- reflexivization in Georgian) will have a global condition allowing the rule to refer to initial (and not necessarily final) 1's. Harris formulates tav- reflexivization so that only initial subjects can trigger the rule. A rule which does not treat the inversion nominal as subject will have a global condition restricting the rule to apply to final 1's only, thus excluding inversion nominals, which are final 3's. Hence, in Russian, (Perlmutter 1978), where the inversion nominals fail to undergo Equi (i.e., are not treated as subject by Equi), Perlmutter formulates the rule by conditioning Equi to delete only final 1's, excluding the inversion nominal (a final 3 in Russian).

In what follows, I would like to present some phenomena connected to the rule of Inversion which cannot be readily explained if we replace rule ordering by global conditions on rules. It will be shown in each case that if, instead of rule ordering, we attach global conditions to the rules interacting with Inversion, we run into some serious problems. Therefore, the data presented below is, in effect, evidence for a rule ordering solution of the problems discussed.

II. The Two Inversion Constructions in Imbabura

As described in Cole and Jake (1978), there are two constructions involving Inversion in Imbabura. In the lexical experiencer construction (such as (2)), the inversion nominal can undergo subject referring rules such as Subject Raising and Equi, but the various Switch Reference rules, as well as Object Cliticization, Case Marking and Verb Agreement, treat the Inversion nominal as a non-subject:

(2) Inversion with lexical experiencer verbs in Imbabura
can-da rupa-n
2 sg-acc burn-3
'You are hot.' (Cole and Jake, (1))

For desiderative experiencers (as in (3)) the inversion nominal, in addition to undergoing Subject Raising and Equi, is treated as a subject by the Switch Reference rules, Object Cliticization and, optionally, Case Marking:

(3) Inversion with -naya- desiderative in Imbabura
a. can-da micu-naya-n
2 sg-acc eat-desid-3
'You would like to eat.'

b. ñuca-ta puñu-naya-n
1 sg-acc sleep-desid-3
'I would like to sleep.'

Now, in a derivational framework, like that assumed by Cole and Jake (1978), these facts are accounted for by ordering Inversion in two different places in the derivation: before the Switch Reference, Object Cliticization, Case Marking and Verb Agreement rules for lexical experiencers; and after the above rules for the more 'subjectival' desiderative experiencers. In effect, this implies that we have two different Inversion rules in Imbabura applying in the two constructions. While this is not an elegant solution, it still captures the basic difference between the two constructions. The derivation as stated in Cole and Jake (1978) is given in (4):

(4) Ordering of Inversion (* indicates variability in ordering)

a. Lexical Experiencers	b. Desiderative
Subject Raising	Subject Raising
Passive	Passive
Equi	Equi
*Inversion	Switch Reference Adverbial
*Switch Reference Purpose	Switch Reference Purpose
*Switch Reference Adverbial	Pronominal Object Cliticization
Pronominal Object Cliticization	*Inversion
Case Marking	*Case Marking
Verb Agreement	Verb Agreement

(Cole and Jake, (44))

If one were to try to capture these facts, not by rule ordering, but by imposing global constraints on rules, one would have to formulate all the rules mentioned above which interact with the inversion nominal differently for each construction.

In the lexical inversion construction, for the rules of Switch Reference, Object Cliticization and Case Marking, the inversion nominal fails to have the same properties as a nominative subject. To accomodate these

facts, Switch Reference, Object Cliticization and Case Marking must be formulated as being sensitive to final termhood. But in the desiderative construction, the inversion nominal is treated like a nominative subject by these rules. The desiderative construction facts could be accomodated by making Switch Reference, Object Cliticization and Case Marking sensitive to initial termhood. Thus, one will have to split up all the rules which treat the lexical inversion nominal differently from the desiderative inversion nominal.

The global approach claims, in effect, that in Imbabura we have two Switch Reference rules (or two conditions on switch reference): (a) one rule conditioned to apply to final 1's; and (b) a second rule conditioned to apply to initial 1's. What this predicts is that, if the rules are not otherwise restricted, inversion nominals should be treated either as a subject (by rule b), or as a non-subject (by rule a). This variability is not found, however: in the desiderative experiencer construction the inversion nominal must be treated as a subject, otherwise ungrammaticality results. One solution to this is to have at least one of the rules lexically governed. Thus, Switch Reference$_1$ (restricted to final subjects) will apply with verbs of the lexical experiencer class only while Switch Reference$_2$ (restricted to initial subjects) will apply in all other cases. The same type of rule doubling and lexical government of rules will have to take place for Pronominal Object Cliticization as well. Thus, the unusual behavior of the inversion nominal is tacked onto all the rules interacting with Inversion, whereas, if we employ rule ordering, the oddness of the two constructions is restricted to the rule of Inversion itself (by having different lexical classes governing the two Inversion rules) and to the ordering of the two Inversion rules with respect to other rules of the grammar.

III. Equi and Inversion in Imbabura

Another difficulty for the global approach arises with respect to the interaction of Inversion and Equi. As mentioned above, in both the desiderative and the lexical inversion construction, the inversion nominal can undergo Equi, a rule which otherwise is restricted to deleting subjects in Imbabura, as in (5a) and (5b):

(5) Inversion Nominal undergoes Equi

a. Input structure to Equi

warmi-$\emptyset_i$	mana	gushta-n-llu	S[warmi-ta$_i$	nana-ju]
woman-nom	not	like-3-neg	woman-acc	hurt-prog

b. Output of Equi

warmi-$\emptyset_i$	mana	gushta-n-llu	$\emptyset_i$	nana-ju-na-ta
woman-nom	not	like-3-neg		hurt-prog-inf-acc

'A woman doesn't like to hurt.'

These facts are captured correctly in (4) by ordering Inversion after Equi. (Note, incidentally, that this implies that Inversion is a last or post-cyclic rule in Imbabura).

If, however, we try to capture the same facts by global constraints on Equi, we run into a serious problem. The constraint needed to include inversion nominals as Equi victims would have to state that Equi can delete not only final 1's (like passive subjects, for example) but also initial 1's like the inversion nominal warmi-ta in (5a)). This, however, runs into immediate problems: whereas passive subjects can be Equi victims, in Imbabura, passive agents cannot, as shown in (6):

(6) a. Passive subject undergoes Equi
warmi-ca$_i$ mana muna-n-llu [$\emptyset_i$ runa maca-shca ca-na-ta]
woman-topic not want-3-neg [man hit-past part be-inf-acc]
'The woman doesn't want to be hit by the man.'

b. Passive Agent does not undergo Equi
*runa$_i$ mana muna-n-llu [warmi-ca $\emptyset_i$ maca-shca ca-na-ta]
man not want-3-neg [woman-topic hit-past part be-inf-acc]
('The man doesn't want the woman to be hit by him.')

Thus, to review, if Equi can only apply to final 1's, it makes the wrong prediction that the inversion nominal will not delete under Equi; if Equi only deletes initial 1's this incorrectly predicts that passive subjects cannot delete. Allowing Equi to delete both final and initial 1's erroneously predicts that the passive agents in (6b) will delete under Equi.

The various possibilities are shown in the chart (7), where (*) shows incorrect predictions, (+) indicates that deletion is predicted, and (-) indicates that deletion is not predicted.

(7)

Condition on Equi	Predictions for undergoing Equi	
Equi deletes only final 1's	Passive Subjects	+
	Passive Agents	-
	*Inversion Nominals	-
Equi deletes only initial 1's	*Passive Subjects	-
	*Passive Agents	+
	Inversion Nominals	+
Equi deletes both final and initial 1's	Passive Subjects	+
	*Passive Agents	+
	Inversion Nominals	+

Thus, none of the "stratal conditions" of the type used by Perlmutter and Harris can account for the above array of facts[2], while rule ordering offers a simple explanation.

IV. Historical Change in the Inversion Construction

The last example bearing on the issue of rule ordering versus global conditions is connected to historical change in the Inversion construction.

Historical change in the inversion construction is documented by Harris (1978) and by Cole, Harbert, Hermon and Sridhar (1978). The central claim of Cole et al. is that experiencers (inversion nominals) will tend to undergo historically an increasing number of subject referring rules: first syntactic (behavioral) and later morphological (coding) rules. Thus it is shown, for example, that for Old Icelandic there are no attested cases of dative experiencers (with the exception of the dative experiencer of one verb pykkia 'think') serving as controllers of Reflexivization or undergoing Subject-to-Object Raising and Equi (rules which are independently shown to refer to subjects). In contemporary Icelandic, as documented by Andrews (1976), a radical change has taken place. The same rules which in Old Icelandic did not treat the inversion nominal as a subject, do treat it as a subject in Modern Icelandic. The inversion nominal, then, can control Reflexivization and undergo Subject-to-Object Raising and Equi, as shown in (8)-(10):

(8) Dative experiencer controls reflexivization
henni svelgdist á steikinni sini
she-dat mis-swallowed on steak her-reflex
'She swallowed her steak wrong.' (A 39b)

(9) Dative Experiencer undergoes SOR
ég tel honum líka peir bilar
I believe him like-inf those cars(nom)
'I believe him to like those cars.' (A 19a)

(10) Dative experiencer deletes under Equi
tröllið vonast til að svelgjast ekki á stúlkinni
troll-the-nom hope comp mis-swallowed not on girl-the
'The troll hopes not to swallow the girl wrong.' (A 26a)

Now, it seems to me that the rule ordering approach handles the above facts in a more natural way than the global approach. The rule ordering approach would claim that in Old Icelandic, Inversion applies early in the derivation, before all the grammatical relation changing rules which do not treat the inversion nominal as a subject. The change to Modern Icelandic is captured as a reordering of Inversion to a later stage in the derivation so that, in Modern Icelandic, Reflexivization, Subject-to-Object Raising, and Equi apply before Inversion, which results in the facts shown in examples (8)-(10).

The same type of explanation given above is put forward in Harris (1976) for changes in the Inversion construction in English and Udi. Harris shows that there is a correspondence in the changes these two languages undergo with respect to Inversion. Both languages lose Inversion in their diachronic development by reordering Inversion to follow rules which refer to subjects; that is, as more rules are ordered before Inversion, the rule of Inversion becomes more and more opaque, in the sense that there is less and less evidence that the inversion nominal is demoted to a non-subject, until even rules like Case Marking are reordered before Inversion. Thus, Inversion has no effect on the grammar at all. At this stage, (as in Modern English) Harris claims the rule can be regarded as being 'dead'.

If we describe the above changes in terms of rule ordering, we can claim that the loss of Inversion simply entails reordering Inversion with respect to the relation changing and coding rules of the language. If, however, we replace rule ordering by global conditions, a totally different scenario has to be given for the historical changes noted above. As we cannot refer to rule reordering, we have to assume that the changes (like those seen in the transition from Old to Modern Icelandic) are changes in all the rules interacting with Inversion. Whereas in Old Icelandic, Reflexivization, Subject-to-Object Raising and Equi will have to be conditioned to exclude the inversion nominal (possibly by having a final 1-type of restriction on the rules), in Modern Icelandic the condition is changed to include the inversion nominals by also allowing initial 1's to undergo the above rules.

While in a rule reordering approach the change is captured in the relation of Inversion to other rules, in a global appraoch the change will have to be in the nature of all the rules interacting with Inversion. The latter view seems to claim that it is a mere accident that the inversion nominal is treated differently in Old and Modern Icelandic, since the change in the inversion construction is captured as an accidental by-product of changes in other rules of the language.

V. Conclusions

Let me summarize the main point of this paper. I have shown certain examples of Inversion which pose a problem for a global appraoch, while being readily accounted for in an approach using rule ordering. I would like to make it clear that I do not wish to argue that rule ordering is therefore necessary in syntax. Rule ordering has a variety of well-known deficiencies which I will not enumerate here. What I have tried to show is that one of the more promising substitutes for ordering, global conditions, cannot do the job properly, because it cannot handle the above types of rule interaction handled by ordering. Therefore, a better substitute is still to be sought.

NOTES

*This work was supported by the National Science Foundation (grant number SOC 75-00244 and grant number BNS 77-27159) and the Research Board of the University of Illinois. The assistance of these institutions is gratefully acknowledged.

[1]Let me clarify here the use of "global" in this paper. The term "global" includes any rule or well-formedness condition whose structural or relational description refers to more than one level (in a derivational theory) or more than two continuous strata in a nonderivational theory. Thus, the notion global is independent of derivations, and this paper is not an argument for or against derivational theories.

[2]Of course, one could exclude passive agents by having additional conditions on Equi. Thus, in Imbabura, Equi would have to apply to initial 1's which are also final terms, thus excluding passive agents, which are

initial 1's but final chomeurs. This, in effect, sets the inversion nominals apart from all other 1's which are demoted, since Inversion is the only rule in Imbabura demoting a 1 to a term.

Giving Equi this kind of global power is in effect attaching the specific properties connected to Inversion to the rule of Equi. Tailoring the rule to pick out just this class of nominals without independent justification seems to be an ad hoc solution.

REFERENCES

ANDREWS, Avery. 1976. The VP complement analysis in Modern Icelandic. Montreal Working Papers in Linguistics, 6, 1-23.

COLE, Peter, W. Harbert, G. Hermon and S. Sridhar. 1978. On the acquisition of subjecthood. Studies in the Linguistic Sciences, 8:1 42-71.

COLE, Peter and J. Jake. 1978. Accusative subjects in Imbabura Quechua. Studies in the Linguistic Sciences, 8:1 73-96.

HARRIS, Alice. 1978. Inversion as a rule in universal grammar: Georgian evidence. To appear in D. Perlmutter, ed.: Studies in Relational Grammar.

HARRIS, Alice. 1976. On the mechanism of syntactic rule loss: evidence from English and Udi. Manuscript.

PERLMUTTER, David. 1978. Evidence for inversion in Russian, Japanese, and Kannada. To appear in D. Perlmutter, ed.: Studies in Relational Grammar.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

NEUTRALIZATION IN KOREAN REVISITED

Chin-W. Kim

I reexamine and refute a recent paper by Houlihan (1978) in which she presents a reformulation of neutralization in Korean obstruents so that it may conform to two recent constraints on phonology: (1) Markedness Constraint, and (2) Constraint on Non-Assimilatory Rules. I argue, with further phonetic and phonological examples from Korean, that Houlihan's reanalysis is mistaken and untenable, and that one constraint can be maintained without a reformulation.

In a recent paper, Houlihan (1978) discusses two cases of obstruent neutralization in Korean in conjunction with two recent phonological constraints (Houlihan 1977; Houlihan and Iverson 1978), and argues that two apparent counterexamples presented by the Korean data are not counterexamples at all but are in fact supportive of the phonological constraints if given a reformulation of the neutralization data in Korean. This paper tries to show that Houlihan's reformulation of Korean is not tenable and that Korean still remains an exception to one of the proposed constraints in phonology, while the other constraint can be preserved without a reanalysis of neutralization phenomena in Korean.

In the first part of this paper, I will present the facts about neutralization in Korean, their relevance to Houlihan and Iverson's proposed constraints in phonology, and Houlihan's reformulation that purportly circumvents the problems presented by the Korean data. In the second part, I will show that Houlihan's reanalysis of Korean neutralization is not well motivated on both phonetic and phonological grounds.

Obstruents in Korean are all voiceless and are manifest in three different series, which are, in increasing degree of aspiration:

1. TENSE (unaspirated) --- p', t', k', s', c'
2. LAX (slightly aspirated) --- p , t , k , s , c
3. (tense heavily) ASPIRATED --- p^h, t^h, k^h, h , c^h

This distinction is maintained initially and prevocalically. Thus,

(1)

p'al 'to suck'	t'am 'sweat'	coki 'yellow corvina'
pal 'foot'	tam 'fense'	cok'i 'vest'
p^hal 'arm'	t^ham 'greed'	cok^hi 'sufficiently'

sal 'flesh'	cangku 'a Korean drum'
s'al 'rice'	c'angku 'a protruded forehead'
hal 'to do'	c^hangku 'a window'

But there are cases in which the distinction is wholly or partially neutralized. A total neutralization occurs before a word boundary or before another consonant (Final Obstruent Neutralization). In such a case, the three series of obstruents are neutralized into the lax lightly aspirated series. For example,

(2) mək-ərа 'eat!' but mək -ta 'to eat'
sək'-ərа 'mix!' sək-ta 'to mix'
puək^{h}-e 'in kitchen' puək-to 'the kitchen also'

nas [nat] 'a sickle'
nat^{h} [nat] 'a piece'
nac [nat] 'daytime'
nac^{h} [nat] 'face'

A partial neutralization of obstruents occurs after another obstruent (Post-Obstruent Tensing). In this case, there is a neutralization between a lax stop and a tense stop into a tense stop (but aspirated stops are not affected). For example,

(3) tæki 'waiting' but cəp-tae [cəpt'ae] 'hospitality'
t'æ ki 'the letter ki meaning time', cəp-t'æ 'that time'

sa-pun 'four minutes' but sip-pun [sipp'un] 'ten minutes'
sa-p'un 'four only' sip-p'un [sipp'un] 'ten only'

With this much introduction of the facts on obstruent neutralization in Korean, let's now consider how they relate to Houlihan and Iverson's putatively universal constraints in phonology.

First, according to what is called the Markedness Constraint, proposed by Houlihan and Iverson (1978) and given in (4), all neutralization rules change relatively marked segments to relatively unmarked ones, where relative markedness of segments is determined from implicational universals.

(4) Markedness Constraint (Houlihan and Iverson 1978)

Phonologically-conditioned neutralization rules convert relatively marked segments into relatively unmarked segments.

Second, according to the Constraint on Non-Assimilatory Rules, proposed by Houlihan (1977) and given in (5), non-assimilatory feature-changing rules apply at the boundaries of larger phonological units (e.g., phrases, words) before they apply at the boundaries of smaller phonological units (e.g., syllable, morphemes).

(5) Constraint on Non-Assimilatory Rules (Houlihan 1977)

> Non-assimilatory phonological rules originate at the strongest phonological boundaries and later spread to apply at progressively weaker phonological boundaries.

Now, the two cases of neutralization in Korean, Final Obstruent Neutralization and Post-Obstruent Tensing, both neutralize the contrast between tense and lax unaspirated obstruents. However, Final Obstruent Neutralization exemplified in (2) produces lax obstruents, while Post-Obstruent Tensing exemplified in (3) produces tense obstruents. Since it must be the case that either lax obstruents are marked with respect to tense ones, or vice versa, one of the two changes unmarked segments to marked ones and thus appears to violate the Markedness Constraint (4).

Also, Post-Obstruent Tensing appears to be a non-assimilatory rule, since there is no feature in the structural description of the rule with which the feature in the structural change agrees. However,the rule applies syllable-initially only in word-medial positions, but does not apply word-initially. This rule, then, appears to violate the Constraint on Non-Assimilatory Rules (5).

It is to the apparent violations of these phonological constraints by Korean that Houlihan (1978) is addressed. In particular, Houlihan presents a reformulation of neutralization rules in Korean in which they no longer constitute counterexamples to the two constraints.

There are two ways to show this. In the case of Final Obstruent Neutralization, one can argue either that it is not a case of neutralization at all or that both rules of neutralization in Korean neutralize the tense/lax contrast into the same member of the opposition, and furthermore that that member is unmarked with respect to the other. And in the case of Post-Obstruent Tensing, one can argue either that it is an assimilatory rule, therefore not needing to obey the constraint on non-assimilatory rules, or that the rule applies word- and phrase-initially as wells as syllable-initially in word-medial positions. Houlihan takes the path of the latter in the former case and that of the former in the latter case.

Houlihan's argument, in brief, is that the segment type into which the three series of obstruents neutralize in the syllable-final position before a word-boundary or another consonant is not a lax stop, as has been traditionally regarded, but rather a tense stop, and that a tense stop is less marked than a lax stop. This reformulation not only would make the Final Obstruent Neutralization conform to the Markedness Constraint but also would exemptthe Post-Obstruent Tensing from the Constraint on Non-Assimilatory Rules, for, now, the syllable-initial neutralization would be an assimilatory phenomenon in which a post-obstruent lax stop becomes a tense stop in assimilation in manner to the preceding stop which has laready been neutralized into a "tense" stop according to Houlihan's reanalysis.

The question of whether the syllable-final stops are neutralized into tense or lax stops is a phonetic one. Houlihan points out correctly that most of the experimental studies on Korean consonants do not shed much light on the issue because they are concerned with the distinction that different series of stops manifest in prevocalic position. Since the distinction is in fact obliterated in the syllable-final position, it is understandably of little interest to those who want to elucidate the phonetic differences between the different series. Traditionally, it has been regarded that the neutralization takes place in favor of the lax series, primarily because of the fact that in the unreleased state in the syllable-final position, there is neither aspiration nor tenseness.

Houlihan takes a different point of view and argues that the syllable-final neutralization takes place in favor of a tense stop. Her entire argument is based on "an informal survey" suggesting that "some native speakers of Korean may consider syllable-final stops to be tense" (p. 91). The "survey" consisted of five native speakers of Korean who were asked to consider a minimal triplet of words that differed only in the manner of articulation of the initial stop. In each word, the syllable-final stop was homorganic as the initial one. The subjects were asked to say in which of the three words the initial and final stops were most similar to each other. According to Houlihan, three out of five subjects chose the word in which the initial stop was tense (the other two chose the word in which the initial stop was lax).

This is the entire account of Houlihan's informal survey. There is no example of minimal triplets used, there is no mention of how many sets of triplets were presented, or whether the subject responses were consistent across stops with different places of articulation, etc. Presumably, Houlihan used the following kind of triplets:

(6)

	Labial	Dental	Palatal	Velar
Lax	pVp°	tVt°	cVc°	kVk°
Tense	p'Vp°	t'Vt°	c'Vc°	k'Vk°
Aspirate	$p^hVp°$	$t^hVt°$	$c^hVc°$	$k^hVk°$

where V is any vowel and the superscript circle [°] is a diacritic indicating unrelease. There is no mention in Houlihan (1978) how the data such as the above were presented to the subjects. If they were asked to read the data written in the native Korean script, Houlihan somehow must have had to circumvent the problem of representing unreleased stops, for there is no letter for unreleased stops in the Korean script. If the data was tape-recorded and presented to the subjects, still some one must have read it into the tape from the written data. In any case, the result that three out of five subjects thought that the final stop was tense is

a bit surprising in view, if nothing else, of the fact that the morphophonemic structure of Korean does not permit a syllable final tense stop except the velar /k'/(e.g., pak' 'outside', sək'- 'to mix').

I will argue later that Houlihan's position is untenable and that the traditional view is in fact correct. But for now let's move on with the second part of Houlihan's argument.

Houlihan, having now established that the syllable-final neutralization in Koreanis resolved in favor of a tense stop, proceeds to argue that the tense stop is less marked than the lax counterpart. Here, Houlihan's argument rests on a universal implicature which says that "if the presence of a segment X in a language implies the presence of a segment Y, but not vice versa, then X is marked with respect to Y, and Y is unmarked with respect to X." (p. 92) Applying this criterion, Houlihan finds tense stops in Korean less marked than lax stops, for all languages have voiceless unaspirated stops and the Korean tense stop most resembles this universally unmarked stop.

It is not clear whether the universal implicature of this kind is to be determined at the level of underlying representation or at the surface level of phonetic representation.The tone of the argument in p. 93 makes it appear that it is at the phonetic level. If such is the case, then the universal implicature has some problems. For one thing, there are languages in which there is no voiceless unaspirated stop: at the phonetic level, e.g., Lac Simon Ojibwa, Shona, etc. (I owe these examples and some of the immediately following arguments to David Odden.) Secondly, it will mark, in a language such as English, voiced stop /b/ (which is phonetically voiceless and unaspirated initially and finally) as less marked than the voiceless stop /p/. On the other hand, if the implicational hierarchy is to be determined and maintained at the underlying level, then one would be forced to derive voiceless aspirated stops on the surface in the above languages from underlying aspirated stops. Presumably, aspiration will be added by a rule of phonetic detail. And since in these languages, no rule will ever make reference to the nonaspirate character of the voiceless stops, the phonetic detail rule can be ordered before all the other rules, and the only motivation for deriving, say [t^h] from /t/ in a language like Shona, would be the fact that the universal implicature in question dictates it. This mode of argumentation is arbitrary, circular, and nonrefutable.

Below, I cite two phenomena in Korean that seem to indicate that tense stops are not more unmarked than lax stops.

First of all, the functional load of tense stops in Korean is much lighter than that of lax stops. In the syllable-final position, only a handful of words may end in k'. There is no word ending in p', t', or c'. Even in the word-initial position, tense stops occur much less frequently.

A count of pages in a Korean-English dictionary shows the following distribution in the size of entries beginning with different consonants:

(7) p - 126, t - 100, s - 155, c - 152, k - 213
p' - 6, t' - 18, s' - 8, c' - 6, k' - 18

Note that the number of words beginning with a lax obstruent outweighs the number of words beginning with a tense obstruent. This is indicative of relative magnitude of the functional load of tense and lax stops in Korean.

Secondly, in sound symbolism in Korean, words containing tense stops express intensified motion or state, and are derived from non-intensified (unmarked) sound symbolic words by changing the lax stops in them into tense ones. For example,

(8)	Circular motion	Ringing sound	Gamboling
Normal	ping-ping	tæng-tæng	kangtong-kangtong
Intensified	p'ing-p'ing	t'æng-t'æng	k'angt'ong-k'angt'ong

It would be reasonable to assume that unmarked segments are in some sense more basic than the marked ones, that the functional load of the basic segments is greater than that of marked ones, and that, in sound symbolism, intensified expressions are semantically marked and are derived from semantically unmarked non-intensified expressions which are conveyed via unmarked plain segments. According to these criteria, then, lax consonants are much less marked than tense consonants in Korean, as has long been regarded by both grammarians and naive natives.

As for the question whether the syllable-finally neutralized stop is tense or lax, I present below a phonetic and a phonological argument showing that the neutralized segment is in fact lax, not tense as Houlihan has claimed.

While a definitive and direct phonetic evidence may be lacking, it is not difficult to infer from available sources that the stop into which all syllable-final stops are neutralized is neither aspirated nor tense. Much of phonetic exponents of aspiration and tenseness are realized only when the closure of a stop is released. Thus, if aspiration is but a matter of positively valued voice onset time, the VOT cannot be measured in unreleased stops. Likewise, tenseness which is often manifest in terms of heightened oral air-pressure and/or muscular tension is absent in unreleased stops because, with no burst (plosion) to follow the release, the oral air need not even be pressurized. A reexamination of some old electromyographic data of mine in fact showed that in the words t'ək 'rice-cake' and k'och [k'ot°] 'flower', there was less muscular activity in [t°] of [k'ot°] than in [t'] of [t'ək°], and in [k°] of [t'ək°] than in [k'] of [k'ot°]. (Unfortunately, I could not find the words that contained homorganic initial and final stops for direct comparison.)

As for phonological evidence that shows that a syllable-finally neutralized stop is lax, note the phonetic forms of the following compound nouns.

(9) ap^{h}+əlin [abərin] 'the gentleman ahead' *[ap'ərin] or *[ap^{h}ərin]
pat^{h}+wi [padwi] 'top of the garden' *[pat'wi] or *[pat^{h}wi]
pu k^{h}+an [puəgan] 'inside the kitchen' *[puək'an] or *[puək^{h}an]
os+ipki [odipki] 'clothes-wearing' *[ot'ipki] or *[osipki]
nac^{h}+insang [nadinsang] 'facial impression' *[nat'insang]

The above exemplifies a subcase of rather complex boundary phenomena in Korean (for details, see Kim 1970), but presents an unmistakable evidence that syllable-finally neutralized obstruents are not tense but lax. This is so because of the following reasons. The second element in each of the compound in (9) begins with a vowel. One might expect from this that pronunciation of the form [ap^{h}ərin], [puək^{h}an], etc. would occur, since one does get the forms like aph-e [ap^{h}e], puək^{h}-e [puək^{h}e], etc. But pronunciations like [ap^{h}ərin], [puək^{h}an], etc. are non-occurring and unacceptable. And since neutralization of obstruents does not take place prevocally, especially when it involves aspirated obstruents, one must assume that a compound boundary between the two elements in each example in (9) plays a role in determining the phonetic shape of the compound, and that, in fact, it is this compound boundary that makes the preceding obstruent behave like a syllable-/word-final consonant, despite the fact that it is followed by a vowel, and changes it into a neutralized unreleased segment. What is interesting and important to note here is that this neutralized obstruent is pronounced as a voiced lax stop in the final phonetic form. Now in Korean, only lax stops can become voiced intervocalically, e.g.,

(10) pal 'foot', sin-pal [sinbal] 'foot-wear, shoes'
tal 'moon', pan-tal [pandal] 'half-moon'
ky ng 'about', ne-si-kyəng [nesigyəng] 'about 4 o'clock'
cang 'head', si-cang [sijang] 'mayor'

This intervocalic voicing rule (any phonological rule, in general, for that matter), however, does not apply across word or phrasal boundaries. Since in the compounds in (9), the voicing nevertheless takes place, what it means is that after the neutralization has taken place, the word boundary is deleted or reduced to a morpheme boundary, enabling now the voicing rule to apply. The fact that in this case the syllable-final obstruents in (9) surface as voiced stops is a clear indication that they are neutralized into lax, not tense, stops before undergoing voicing. For if they were neutralized into tense unaspirated stops, as Houlihan has argued, then they should surface as they are. But forms like [ap'ərin], [puək'an], etc. do not occur, indicating clearly that syllable-final obstruents are not neutralized into tense stops.

In summary, Houlihan (1978) has attempted to solve a dilemma projected by two cases of neutralization in Korean onto her two proposed universal constraints in phonology by way of reformulating the neutralization phenomena in such a way that the syllable-final obstruents are neutralized into a tense stop and that a tense stop is less marked than a lax stop. I have argued, however, that such reformulation is arbitrary and unwarranted by showing that the stop into which syllable-final stops are neutralized is lax and that a lax obstruent is less marked than a tense obstruent.

It appears then that the Korean examples still remain as violators of Houlihan's constraints. However, the Markedness Condition can be maintained without any reanalysis. To see this, we now must separate the two neutralization rules in Korean and consider them individually. I think that Houlihan made a basic error in regarding the syllable-final obstruent neutralization and the post-obstruent syllable-initial neutralization as being instances of the same neutralization rule occurring in complementary environments. In point of fact, the two are **not** the same. For one thing, the syllable-final neutralization is, as was noted before, an unconditional neutralization involving all three series of obstruents, while the so-called post-obstruent syllable-initial neutralization is at best a partial one involving lax and tense series , but not aspirated series. Secondly, in syllable-final neutralization, the segment into which all three series of obstruents are neutralized is, strictly phonetically speaking, not one of the three, but a fourth type, i.e., unreleased. Seen this way, the syllable-final neutralization rule in Korean is not a neutralization rule but rather an allophonic rule that merges segments to some new segment not present in the input to the rule, just as the merger of /t/ and /d/ to the tap [ɾ] between stressed and unstressed syllabic segments in certain dialects of American English is an allophonic rule rather than a neutralization rule (cf. Houlihan and Iverson 1978:9). If this is the case, then the syllable-final neutralization in Korean would not be subject to the Markedness Constraint. Even if it is not, it still will not violate the Constraint because, the lax obstruent being the most unmarked obstruent, neutralization into a lax obstruent would be in confirmity with the constraint.

As for the Post-Obstruent Tensing, if it is regarded as a case of non-assimilatory neutralization, and at the moment I have no way of arguing otherwise, it still violates both constraints (4) and (5), because it neutralizes a segment into a more marked one (i.e., lax to tense) and because it occurs word-medially but not across word boundaries. It is possible to regard the phenomenon as a case of some sort of merger or assimilation in the sense that the oral pressure resulting from two conjoined stops is heightened enough to turn the segment into a tense stop (cf. Kim-Renaud 1978). But it is too speculative, and I will have to defer it to a further study in the future.

REFERENCES

HOULIHAN, Kathleen. 1977. On assimilatory and non-assimilatory phonological rules. Paper presented at the Winter Meeting of the Linguistic Society of America. Chicago, Illinois. December 1977.

————. 1978. On neutralization in Korean stops. Minnesota papers in linguistics and philosophy of language 5.87-95.

———— and Gregory K. IVERSON. 1978. Functionally-constrained phonology. To appear in Current approaches to phonological theory, ed. by Daniel A. Dinnsen. Bloomington, IND: Indiana University Press.

KIM, Chin-W. 1965. On the autonomy of the tensity feature in stop classification - with special reference to Korean stops. Word 21.339-359.

————. 1970. Boundary phenomena in Korean. Papers in linguistics 2.1-26.

KIM-RENAUD, Young-Key. 1978. The syllable in Korean phonology. In Chin-W. Kim ed.: Papers in Korean linguistics, pp. 85-98. Columbia, South Carolina: Hornbeam Press, Inc.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

PRINCIPLES OF STRESS ASSIGNMENT; A CROSSLINGUISTIC VIEW*

David Odden

Principles of stress assignment play an important role in discussions of conventions for expanding parentheses. Kiparsky (1973) notes that stress in Cheremis is assigned to the last full vowel of the word, but to the first reduced vowel of the word if there are no full vowels in the word. He then proposes a stress assignment rule involving subscripted parentheses. The fact that parenthesis notation can successfully be employed to represent the stress assignment rule of Cheremis was then taken to be evidence for the conventions that the longest expansion of a rule abbreviated with parentheses applies first and that parentheses notation collapses disjunctively ordered rules. This argument would receive strong support if the notation more narrowly characterized the class of possible stress rules. In the following sections, I shall investigate the characteristics of phonetically based stress assignment rules in various languages, in order to give a more solid empirical foundation to claims regarding possible and impossible stress systems. I shall argue that from a crosslinguistic standpoint, a more atomistic approach to stress assignment is necessary. The Elsewhere Condition proposed by Kiparsky will be shown to simplify the description of certain stress assignment systems. I will argue that assignment of alternating stresses is separate from, and sometimes entirely independent of, main stress assignment.

I. Main Stress Assignment

Kiparsky (1973) discusses the stress assignment rules of Cheremis and Komi Jazva, which appear to require subscripted parentheses in their formulation. In Cheremis, the last full vowel of the word is stressed, but the first vowel is stressed in words containing only reduced vowels. A formally similar rule is encountered in Komi Jazva, which assigns stress to the first full vowel of the word, but to the last vowel of the word if there are only reduced vowels. Rules along the line of (1) and (2) are required for Cheremis and Komi Jazva, respectively.

1) $V \Rightarrow [+\text{stress}] \;/\; \_\_\_\_ (C_0 \check{V} C_0)_0 \#$

2) $V \Rightarrow [+\text{stress}] \;/\; \#(C_0 \check{V} C_0)_0 \_\_\_\_$

Kiparsky argues "that the success of these rules depends on the disjunctive application of the infinite set of cases represented by the environment

$(C_o\breve{V}C_o)_o$. We require that the longest applicable expansion, and only this, should apply to each input (p.102)."

An alternative is available to (1) and (2) which neither depends on the disjunctive nature of parentheses nor on the longest-first convention. Specifically, (2) can be reformulated as two rules.

3) $\bar{V} \Rightarrow [+\text{stress}] \; / \; \# \; (C_o\breve{V}C)_o \; \_\_\_\_$

4) $V \Rightarrow [+\text{stress}] \; / \; \# \; (C_o\breve{V}C)_o \; \_\_\_\_ \; C_o\#$

It could be argued that (3) and (4) miss a significant generalization about stress assignment and that, since the standard conventions on rule application correctly assign stress to the Komi Jazva forms, rule (2) is to be preferred to (3) and (4).

The stress assignment system of Komi Jazva is not, however, the typical case. A more commonly occurring rule is one like that found in Modern Mongolian. In that language, stress is assigned to the first long vowel or diphthong, but to the first short vowel of words containing only short vowels (Poppe, 1951).

5)	dăga	"Filly"
	tăilwar	"commentary"
	utắ	"smoke"
	noxoí	"dog"
	xutagắr	"knife (instr.)"
	dăgār	"Filly (instr.)"
	xŏ̄loi	"throat"
	dạlaígār	"sea (instr.)"
	xạ́da	"cliffs"
	ạ́xan	"older brother"

It is impossible to describe this stress assignment system if we assume that a single stress assignment rule is to account for both words with at least one long vowel and words with no long vowels. Two rules must be assumed to operate. One rule assigns stress to strong syllables:

6) $V \Rightarrow [+\text{stress}] \; /\# \; (C_1\breve{V}C_1)_o \; \_\_\_\_V$

A second rule assigns stress to words containing only short vowels.

7) $V \Rightarrow [+\text{stress}] \; /\#C_o\_\_\_\_(C_1\breve{V}C_1)_o\#$

It was suggested above that stress in Komi Jazva and Cheremis might be accounted for by two rules with nonoverlapping domains of application. The analysis proposed there carries the implicit claim that it is coincidental that (3) and (4) are found together in Komi Jazva. That approach also claims that it is a coincidence that Cheremis contains the mirror image versions of (3) and (4), i.e. (8) and (9).

8) $V \Rightarrow [+\text{stress}] \; / \; \_\_\_\_(C_o\breve{V}C_o)\#$

9) $V \Rightarrow [+\text{stress}] \; /\#C_o \; \_\_\_\_(C_o\breve{V}C)_o \; \#$

The atomistic approach to stress in these languages predicts there could exist a language with (3) and (9), and in fact, Mongolian is such a language. Thus, the existence of the two stress rules in Mongolian lends support to the two rule analysis of Komi Jazva and Cheremis stress.

If the stress assignment system of Mongolian were atypical, it would constitute a very weak argument for assigning stress by two rules in general. However, the stress rule of Mongolian is not a rare and isolated example. There are a number of languages which have fundamentally the same stress rules. In Lake Miwok, stress is assigned to the first strong syllable of the word (including VCC), but otherwise to the first syllable (Callaghan, 1965).

10)	báksetuka	"to belch"
	cáadada	"kingfisher"
	camánka	"to destroy"
	ʔutúutak	"to be stingy"
	ʔijac'áac'asi	"to be bumpy"
	doʔomáatak	"that hunter"
	ʔúne	"mother"
	ʔáje	"stick"
	búkʰal	"fishtrap"

The Lhasa dialect of Tibetan has this rule as well, where strong syllables are those containing a long vowel (N. Nornang, personal communication).

11)	tʉ́ʉ́tʉ̃ʉ̃	"shirt"
	loptsée	"lesson"
	laptée	"of the student"
	lagáã	"school"
	lápta	"student"
	ñúgu	"pen"

In Lushootseed, stress falls on the first non-schwa vowel of the stem, but on the first schwa if the stem contains only schwas (T. Hess, V. Hilbert, personal communication).

12)	kʷáxʷad	"help"
	kíisəxʷ	"get up"
	x̌álalikʷ	"write"
	sqʷíqʷəbay	"puppy"
	sqʷəbáy	"dog"
	gʷədíl	"sitting"
	x̌əɬx̌əɬšád	"sore feet"
	x̌əɬx̌əɬx̌əc̓	"depressed"
	ʔəɬədəxʷ	"eating now"

The same rule is encountered in Yana, according to Sapir and Swadesh (1960): "The word stress, variable to some extent, tends to fall on the first heavy syllable, that is, on the first syllable which is either closed with a consonant or which contains a vowel cluster. Where there is no heavy syllable, the first syllable tends to carry the stress."

Since this stress pattern is encountered in a number of languages, an

adequate theory of stress assignment should value this type of stress rule as much as it values the Komi Jazva stress rule. In fact, the Komi Jazva rule itself is atypical. I have encountered no analogous stress rules which calculate from the beginning of the word, and place stress on the last syllable of the word when no strong syllables are present.

Since initial plausibility is lent to the approach which assigns stress by two or more independent rules, it is useful to investigate what other types of stress systems are actually encountered in various languages to develop a better idea of what constitutes a possible stress assignment system.

Stress assignment in Hopi is calculated from the beginning of the word: it falls on the initial syllable of one and two syllable words, and on the second syllable of longer words if the first syllable is short, but on the first syllable otherwise (Kalectaca, 1978).

13)	qátu	"sit"	núy	"me"
	máana	"girl"	péev	"almost"
	síkwi	"meat"	máamat^{s}i	"recognize"
	péntani	"will write"	wúnuvtu	"stand up"
	qöt^{s}ámomost	"white cats"		

In line with the two rule analysis of other stress rules, the following pair of rules is proposed for Hopi.

14) $V \Rightarrow [+stress] \;/\; \#\ C_0\check{V}C \_\_\_\_ CV$

15) $V \Rightarrow [+stress] \;/\; \#\ C_0 \_\_\_\_ C_0 \left\{ \begin{matrix} V \\ [-stress] \\ \# \end{matrix} \right\}$

Initially, one might hope to express this generalization as a single rule such as the following:

16) $V \Rightarrow [+stress] \;/\; \#\ (C\check{V})C \_\_\_\_ (C_0V)$

The righthand context (C_0V) assures that if a final syllable is also present in the word, i.e. in bisyllabic words such as qátu, that final syllable will not receive stress, but it also is designed to guarantee that a final unstressed syllable is not a necessary condition for application of the stress rule, in order that monosyllables also receive stress. The left hand context ($C\check{V}$) allows an open syllable to be skipped over. However, taken together, these two rules will potentially lead to incorrect results. In bisyllabic forms such as qátu, the rule first looks for a vowel which is both preceded and followed by a syllable. There is no vowel satisfying those conditions in this word, so the longest expansions cannot apply. The correct results can be obtained either if the righthand parentheses are expanded before the lefthand parentheses, or if the shorter expansion of both parentheses is selected next. Since there is no independent evidence to show that either of these assumptions is justified, we cannot confidently offer (16) as an alternative to (14) and (15).

There is, nevertheless, a clearly unsatisfactory element in this two rule analysis: specifically, the more general rule of initial stress assignment placing stress on the initial syllable is complicated considerably by specifying that the initial vowel is followed by an unstressed vowel or by no vowel

at all. However, that specification serves only to prevent initial stress from being assigned to words previously stressed by (14). The specification $\left\{ \begin{matrix} V \\ [-\text{stress}], \end{matrix} \right.$ $\left. \begin{matrix} \\ \# \end{matrix} \right\}$ a suspicious expression of this disjunctive relation.

A more enlightening formulation of (15) is possible if we invoke the conditions on disjunctivity argued for in Kiparsky (1973), i.e. the Elsewhere Condition. According to this condition, "Two adjacent rules of the form $A \Rightarrow B/P\_\_\_Q$, $C \Rightarrow D/R\_\_\_S$ are disjunctively ordered if and only if: a) the set of strings that fit PAQ is a subset of the set of strings that fit RCS, and, b) the structural changes of the two rules are either identical or incompatible." Invoking the Elsewhere Condition, the following rule may be substituted for (15).

17) $V \Rightarrow [+\text{stress}] \ /\#C_0\_\_\_\_$

Since the set of forms which can undergo (14) is a subset of the forms which can undergo (17) and since the structural changes are identical, the EC assures disjunctive ordering between these two rules. This is in fact correct, as shown in the derivations below.

18)	qatu	wunuvtu	nuy	
	na	wunúvtu	na	(14)
	qátu	Disj.	núy	(17)

By exploiting the predictions of the EC, stress assignment can be described by two simple and natural rules. By employing the EC, we are also able to simplify the expression of the Mongolian stress system. In place of the more complex rule (7) which assigns stress to a word just in case stress has not been previously assigned, the initial stress rule (17) such as is found in Hopi will apply. According to the EC, that rule will only apply if no previous stress assignment rule has assigned a main stress. Thus, it is unnecessary to mention that initial stress occurs on a short vowel only if there are only short vowels throughout the word in the case of Mongolian, since that fact is already guaranteed by the EC.

Stress in Tahitian is assigned to the first long vowel or diphthong of the word, but to the penultimate vowel in words containing no long vowels or diphthongs (Tryon, 1970).

19)	tamaîre	"boy"	tíare	"flower"
	faráoa	"bread"	tamāroa	"boy"
	fare	"house"	taʔáta	"person"
	ʔohipa	"word"	pahī	"ship"

Under the two rule analysis espoused here, Tahitian will contain two stress rules.

20) $V \Rightarrow [+\text{stress}] \ / \#(C\breve{V})_0 \ C \_\_\_\_ V$

21) $V \Rightarrow [+\text{stress}] \ / \ \_\_\_\_ CV\#$

Rule (20) assigns stress to the first vowel cluster from the left and, only in case that rule is not able to apply, (21) assigns stress to the

penultimate vowel. The EC guarantees that no forms which undergo (20) can also undergo (21).

In addition to allowing a simpler description of stress in Mongolian, Hopi and Tahitian, the two rule approach which exploits the EC also provides an independent explanation why certain stress systems are rarer than others, even though there is no formal reason to expect such a difference. On independent grounds, we know that final stress is relatively uncommon (Hyman, 1977). Therefore we would expect that a system which stresses the initial syllable as the elsewhere case would be more common than a system which places stress on the final syllable in the elsewhere case, regardless of whether stress on strong syllables is determined from the left or from the right. This prediction is born out, as shown by the fact that only one example has been encountered which has final stress elsewhere, i.e. Komi Jazva.

Stress in Indonesian normally falls on the penultimate syllable; if that syllable contains schwa, stress falls on the final syllable (Wolff, 1971).

22)	pərgí	"go"	mangərrí	"understand"
	sája	"I"	saudára	"you"
	səlámat	"blessed"	tantú	"certain"

There are two feasible approaches to Indonesian stress assignment. One approach restricts the class of vowels which can undergo penultimate stress assignment to the non-schwa vowels, and employs the following rules.

23) $V \\ [-\text{reduced}] \Rightarrow [+\text{stress}] \ / \ \_\_\_\_ C_0 VC_0 \#$

24) $V \Rightarrow [+\text{stress}] \ / \ \_\_\_\_ C_0 \#$

The other approach looks at the penultimate vowel and stresses the final vowel if the penultimate vowel is schwa, but stresses the penultimate vowel otherwise, by employing the following two rules.

25) $V \Rightarrow [+\text{stress}] \ / \ ə \ C \ \_\_\_\_ \ C_0 \#$

26) $V \Rightarrow [+\text{stress}] \ / \ \_\_\_\_ \ C_0 VC_0 \#$

Under either approach, if stress is previously assigned by the earlier rule, (23) or (25), then stress cannot be assigned by the elsewhere case, (24) or (26), as guaranteed by the EC.

Since I am aware of no evidence internal to Indonesian which can resolve the question of which version of stress assignment should be chosen, I shall turn to external evidence to determine which formulation receives cross-linguistic support. Stress in Tondano generally falls on the penultimate mora, with the following complications. If the penultimate mora is schwa followed by a single consonant in a word containing four or more morae, stress falls on the antepenultimate mora. If the penultimate vowel of schwa followed by one consonant and the final vowel is not schwa, stress falls on the final vowel. If neither of these conditions is satisfied, stress falls on the penultimate vowel. In addition to these conditions, stress falls on the antepenultimate mora if that vowel is immediately followed by a vowel which is higher than the antepenultimate vowel, or if that vowel

is separated by a glottal stop from an identical vowel or one which is higher. These cases are illustrated below (Sneddon, 1975).

27) a. Antepenultimate stress with schwa in penult.

kánəna "will be eaten by him"
winkótəna "will be asked by him"

b. Final stress with schwa in penult.

sərá? "fish"
mərədéy "intends to stand"
rimədáy "is standing"

c. Stressed schwa

tə́mpok "tip"
kānə́nku "will be eaten by me"
wə́?ŋəl "stupid"
rə́pət "fast"

d. Penultimate stress

wále "house"
wanúa "village"
karimánka? "spider"
kinánku "has been eaten by me"
wénu "will be given by you"
tikó "throat"
maŋānán "is continually eating"

e. Antepenultimate without ?

réidəm "dark"
máeker "is coughing"
lóurən "will be taken to the lake"
máoas "is washing"

f. Antepenultimate with intervening ?

wó?odo "tommorrow"
rá?ipe? "not yet"
wətí?ila "there"

There is no way to collapse all of these conditions into a single stress assignment rule. Three rules are necessary to account for stress assignment in Tondano.

28) $V \geqslant [+\text{stress}] \;/\; VC_o\_\_\_\_C_o\ əCVC_o\#$

29) $V \geqslant [+\text{stress}] \;/\; əC\ \_\_\_\_C_o\#$
$[-\text{reduced}]$

30) $V_j \rightarrow [+\text{stress}] \;/\; \_\_\_\_((?\ )V_i)C_oVC_o\#$
$j=i$ or i is higher than j

The set of forms which can undergo (28) is a subset of the forms which can undergo (29), so the EC guarantees that no form can undergo both (28) and (29). Similarly, the set of forms which can undergo either (28) or (29) is a subset of the set of forms which can undergo (30), so the EC guarantees that (30) cannot apply to any form which has previously undergone

(28) or (29). The derivations below illustrate the application of these three rules.

31)	/sərаʔ/	/winkotəna/	/rəpət/	/wale/	
	NA	winkotə́na	NA	NA	(28)
	sərа́ʔ	DISJ w.r.t. (28)	NA	NA	(29)
	DISJ w.r.t (29)	DISJ w.r.t (28)	rə́pət	wа́le	(30)

Returning to the problem of the two formulations of stress assignment in Indonesian, we would look at the final-stress rule of Tondano, (29), as being the closest parellel to either (23) or (25) in Indonesian. Since, however, the Tondano final-stress rule incorporates the preceding schwa portion of the environment of rule (25) and the focal restriction of (23), both rules are equally supported. The remaining criterion would appear to be whether a final stress rule is preferable to a penultimate stress rule. I shall therefore leave unresolved the question of which formulation of stress assignment is preferable in Indonesian.

It was observed that in Tondano, stress may fall on the antepenultimate vowel, providing the word contains at least four vowels and the penultimate is schwa followed by a single consonant. (In addition, stress may fall on the antepenultimate vowel under well defined and restricted conditions, as incorporated in (30)). Stress is assigned to the penultimate syllable in Içuã Tupi as well, with the provision that it falls on the antepenultimate syllable of words containing at least five morae (Abrahamson, 1968).

32)	ítĩŋ	"it is white"
	patiwа́pɛ	"bark pan"
	taitítu	"wild pigs"
	ahɛ́abɛbui	"his ling"
	abidа́bidabᵐ	

This stress system can be accounted for with two rules; an antepenultimate stress rule, and a subsequent penultimate stress rule.

33) $V \Rightarrow [+\text{stress}] \;/\; VC_0VC_0 \_\_\_\_ C_1V_1C_1V_1C_0\#$

34) $V \Rightarrow [+\text{stress}] \;/\; \_\_\_\_ C_1V_1C_0\#$

Although rule (33) differs from the Tondano antepenultimate rule (28) in that it is not dependent upon a weak penultima and differs from it in that two preceding vowels are required rather than one, it is crucially similar in that although placement of stress is calculated from the righthand boundary the rule must still look to the left to determine whether there are enough syllables preceding to allow antepenultimate stress assignment.

In the above section, I have argued that there exists a considerable number of stress assignment rules which cannot be described by a single rule schema, but which can be explained by employing two stress assignment rules and imposing disjunctive ordering on those rules by the Elsewhere Condition. I now turn to a consideration of Alternating Stress Rules.

II. Alternating Stress Rules

The interaction between alternating stress assigning rules and main stress assigning rules has been only briefly discussed in a few places in the literature, most notably Chomsky and Halle (1968) and Howard (1973), inter alia, where the relationship between main and alternating stress has been discussed in the context of iterative versus simultaneous application of rules. It is assumed there that Alternating Stress assignment and Main Stress assignment in Southern Paiute are governed by essentially the same rule, which Howard formulates as follows (Howard, 1973:106).

35) $V \Rightarrow [+\text{stress}] \; / \; \underset{[-\text{stress}]}{V} \; C_0 \; \_\_\_$

This rule is posited to account for the fact that in Southern Paiute, the main stress of the word falls on the second syllable of the word, and there is a secondary stress on every even syllable thereafter. A similar rule is posited for Warao which assigns primary stress to the penultimate vowel and copies that stress on every other preceding syllable (Howard, 1973:22).

36) $V \Rightarrow \grave{V} \; / \; \_\_\_ \; C_0 \; \acute{V}$

Howard claims for Warao that (p.22) "there is good reason to doubt the independence of these two processes (i.e. Main and Alternating Stress assignment:DO) and to consider primary stress assignment as part of the alternating stress phenomenon." The argument that these two processes are essentially the same phenomenon is the fact that they can be collapsed as a single rule such as (36).

An equally plausible account is to assume one rule assigning the main stress of the word and a subsequent rule which copies that stress on alternating vowels. In this section, I will investigate the alternating stress systems of a number of languages in order to determine whether main and alternating stress are always assigned by the same rule. The conclusion I shall argue for is that in fact these two types of rules are entirely separate in a number of cases.

If it were a general fact that rules assigning alternating stresses can always be collapsed into single rule schema with the rule assigning main stress, we would have a strong argument that the occurrence of the main stress rule (37) and the alternating rule (38) is not at all coincidental.

37) $V \Rightarrow \acute{V} \; / \; \#C_0VC_0 \; \_\_\_$

38) $V \Rightarrow \grave{V} \; / \; \underset{[+\text{stress}]}{V} \; C_0 \; \underset{[-\text{stress}]}{V} \; C_0 \; \_\_\_\_\_$

On the other hand, if a significant number of stress systems were encountered where these two rules cannot be collapsed, then plausibility is lent to considering main and alternating stress assignment to be governed by different rules.

Such cases are not hard to find: Howard himself suggests that the two processes are different in Tubatulabal. In brief, stress in Tubatulabal is placed on the final syllable of the word, and an alternating stress is

placed on every second preceding mora. Where stress would be expected to fall on the second mora of a long vowel, it appears on the first mora of that vowel, and the calculation of alternating morae proceeds from that mora (Voeglin, 1935).

39) číŋiyál "the red thistle"
tiŋíyalá̋p "on the red thistle"
wítaŋhatal "the Tejon Indians"
wítaŋhátalábatsú "away from the Tejon Indians"
p+t+tp+t+dinát "he is turning it over repeatedly"
ibím+yál "the flower month"
ánaŋálilóop+ganán "he is the one going along pretending to cry"
yûudûyûudát "the fruit is mashing"

In addition, two identical vowels which are contained in the same morpheme and are separated by a glottal stop are treated like a single two mora syllable; that is, the stress is assigned to the first vowel in the cases where the second vowel was expected to receive the stress.

40) kú?ujubíl "the little ones"
uyú?um "the bunch gives"

The analysis assumed here posits a final stress rule and a stress copying rule (41).

41) $V_i \rightarrow$ [+stress] / ____((?)V_j) C_1VC_1V [+stress]

Under one possible account of this data, one would say that there is a later stress shift rule which places stress on the first mora of a long vowel. This analysis would however fail to account for the fact that the calculation of alternating moras proceeds from the position of the reassigned stress. The approach employing a later retraction rule would incorrectly assign a stress to the underlying fifth mora of /p+t+tp+t++dinat/, which would yield incorrect* p+t+tp+t+dinát. An alternative analysis could treat long vowels the same as short vowels in order to explain why the short vowel of ta in wítaŋhátalábatsú is not stressed, even though it is in an odd numbered mora. However, this analysis would incorrectly predict that sequences of long vowels in adjacent syllables would not both be stressed, as in fact they are in yûudûyûudát. Finally, one could conclude that long vowels are always stressed; this analysis would nevertheless fail to account for the fact that V?V behaves in a manner analogous to long vowels. Regardless of the specific formulation of alternating stress in Tubatulabal, that rule cannot be collapsed with the word final Main Stress rule in any straightforward manner.

Other languages have been encountered which have penultimate main stress and stresses alternating backwards from that syllable. Such a language might potentially be more easily accounted for by a single stress rule, such as the stress rule of Warao, as formulated by Howard. In the cases under discussion here, this collapsing is not so easy, since the main stress assignment rule is subject to conditions which the alternating rule is not subject to. For example, in Inga Quechua, stress is placed on the penultimate syllable, and alternating stress is assigned to every other syllable preceding

that syllable. However, if the final syllable ends in m, n, r or y, stress falls on that syllable, and stress alternates from the final syllable (Levinsohn, 1976).

42)	ñámbyag	"path"	káñčis	"seven"
	agl̃áku	"he is taken hold of"	yawár	"blood"
	àpamúy	"to bring"	yukán	"he had"
	pàlakúna	"upper backs"	àpadirukár	"he could bring"

The main stress assignment rule may be formulated as follows:

43) V $\rightarrow$ [+stress] / ____C_0 (V([-sonorant])) #

However, collapsing the main and alternating stress rules in Inga is impossible, since the presence of a sonorant consonant does not inhibit the spread of alternating stresses, cf. àpamúy.

While Howard assumes that main and alternating stress can be collapsed in Warao into a single rule, there is evidence that these two rules cannot in fact be collapsed. While main stress falls on the penultima in most words, it falls on the antepenultima if that vowel is the first member of one of the diphthongs ae, ai or oi. Alternating stress radiates backwards from the main stress (Osborne, 1962).

44)	tíra "woman"
	koránu "drink it"
	táera "strong"
	hóipi "pond"
	yàpurùkitàneháse "verily to climb
	nàhoròahàkutái "the one who ate"
	tiráira "giant woman"
	hàkutáisi "to the one who"
	aùkitó "Augusto"
	èriké "Enrique"

The last two examples are lexical exceptions to the main stress rule and have lexical final stress. Nevertheless, the alternating stresses appear on every other syllable back from the main stress. It would be difficult to incorporate these facts into a stress rule which combined main and alternating stresses. In addition, the combination of these two processes is impossible because of the condition where the antepenultimate vowel is stressed.

The alternating stress system of Piro provides stronger support for the argument that main and alternating stress assignment may be independent processes. In that language, main stress occurs on the penultimate syllable, and an alternating stress occurs on all odd syllables starting from the word initial syllable, leaving at least one syllable unstressed before the main stress. The following data illustrate stress assignment in Piro (Matteson, 1965).

45) nsó "genipa" wálo "rabbit"
ṛutxítxa "he observes taboo" tsìyahatu "he cries"
sạlwayẹhkákna "they visit each other"
ṛuslunọtinitḳána "their voices already changed"
sạplewḥimaṃtanaṭhaḳa "they say he went along screaming again"
tapaluskanawathimananumtanatnaka "it is said that his canoe alone was going along again"

There is, as far as I have been able to determine, no evidence internal to Piro to decide whether there are two secondary stress assignment rules, one placing secondary stress on the initial syllable, and one copying that stress on alternating syllables. There is also no evidence to decide whether an alternating stress is assigned to the pretonic antepenultimate vowel and is later removed by a stress erasure rule, or if secondary stress assignment is to be constrained to block its application to a pretonic vowel. It is, however, quite clear that main and secondary stress assignment must be governed by different rules, since main stress is determined on the basis of the right hand boundary, whereas alternating stress is determined on the basis of the lefthand boundary. The two rule approach to main and alternating stress predicts that languages such as Piro would be expected to exist, since it is claimed that the occurrence of rules (37) and (38) in Southern Paiute is a coincidence.

A similar example of separate main and alternating stress rules is encountered in Zulu. In his description of Zulu, Doke describes the placement of primary and secondary stress as follows (Doke, 1926:p.183): "Secondary stress, not necessarily involving length, is found, as a general rule, on every second syllable back from the penultimate of words with an even number of syllables. If the word has an odd number of syllables, more than three, the secondary stress is found on the root syllable and every second syllable therebefore or thereafter, providing that at least one (maybe two) unstressed syllables are left before the main stress."

Doke's description of the placement of alternating stresses, I shall demonstrate, is at variance with his actual forms. I shall argue that alternating stress is handled by entirely different principles which are not sensitive to the total number of syllables in a word. The analysis I assume here places main stress on the penultimate syllable, as is required in Doke's analysis. A second rule places stress on the root initial syllable. A mirror-image stress copying rule places copies of the root initial secondary on alternating syllables before and after the root initial secondary stress. Finally, a rule of retraction/erasure removes the secondary stress from a syllable which stands immediately before a stressed syllable; if that syllable is preceded by a word initial syllable, the stress is retracted onto that syllable. The following illustrate main stress and root initial stress assignment (Doke, 1926).

46) [bóna "see" [bònakála "be visible"

The following two rules are proposed to account for these data.

47) V ⩾ [+stress] /_____CV

48) V ⩾ [2stress] / [C$_0$_____

49) [bònakàlisísa "be clearly visible"
zijòku [hámba "they will travel"
zijòku [hàmbisísa "they will travel intensively"
ùm̩ [fwànyanyána "little brother"

The following stress copying rule is proposed to account for alternating stresses.

50) $V \rightarrow [2\ \text{stress}] / \underline{\quad} C_o\ V\ C_o\ V$
$[-\text{stress}]\ [+\ \text{stress}]$

The erasure of stresses which stand before the main stress is shown in the following examples.

51) [bònakalísa "make appear"
[bonísa "show"
[fùhlufùhluzèlisisé la "scatter things about carefully for"
ùm̩[fwanyána "little brother"
si[bònisisíle "we saw clearly"
uku[kxebhúka "to tear noisily"

Finally, the retraction of stress onto the initial syllable of the word is shown in the following forms.

52) sì[hambé la "we traveled"
u [shanyana "little stock"

Retraction and erasure are incorporated into the following rule.

53) $(\#C_oV)C_o\grave{V}C_o\acute{V} \rightarrow (\#C_o\grave{V})C_oV \quad C\ \acute{V}$
$[-\text{stress}]$

Sample derivations illustrating the application of these rules are provided below.

54)

si[hambe la		[bonakalisa	
é		í	MSR
à		ò	Root Stress
NA		à	ASR
ì ă		ă	Retraction

zijoku [hambisa		zijoku [hambisisa	
í		í	MSR
à		à	Root Stress
ò		ò	ASR
ă		NA	Retraction

Even though root initial stress is not phonetically present when it would stand before main stress, it must be assigned there in the derivation so that the alternating stress will correctly be assigned to the prefixes in zijòkuhambîsa and so that it will be retracted to the prefix in sì [hambé la.

Although this description is in some sense more complex than that provided by Doke, I argue that the present account is empirically adequate,

whereas Doke's analysis is not. The two analyses of words having an odd number of syllables agree in phonetic output, although the present analysis assumes that stress is assigned to the pretonic position in a form such as bonísa and is erased by a later rule. The difference in predictions lies in the description of words having an even number of syllables. The two descriptions under consideration make the same predictions when there are no prefixes present in the word, but for different reasons. These two analyses predict the same phonetic forms because in words having an even number of syllables and no prefixes, the root initial syllable will always be an even numbered syllable. The critical area where the two analyses differ in their predictions is when prefixes are included. In particular, when the stem contains an odd number of syllables and there are an odd number of prefix syllables, the word will contain an even number of syllables. The consequence is that under Doke's analysis, stress is placed on the word initial syllable, whereas under the analysis proposed here, the stress will occur on the root initial syllable. The latter prediction is in fact the correct one, as seen in si [bònisisíle "we saw clearly," which Doke's analysis would incorrectly predict to be *sìbonìsisísle. Doke's analysis predicts in general that the root initial syllable will be unstressed in any word of an even number of syllables which contains an odd number of syllables in the root, whereas the present analysis predicts that the root initial syllable will be unstressed only when it stands before the main stress. The latter prediction is, as far as I can tell, the correct one.

The conclusion is, therefore, that in Zulu, the alternating stress phenomenon is independent of main stress assignment, and is furthermore not sensitive to the odd number versus even number of syllables in the word. This then suggests that on crosslinguistic grounds, alternating stress may not be a subcase of main stress assignment.

A very interesting stress system is found in Auca, which is described in Pike (1964). There are two clearly independent alternating stress rules (or wave trains), one which assigns stress to the penultimate suffix syllable and every even numbered suffix syllable preceding until the root, and another stress rule stresses the root initial syllable and every odd syllable following until the suffixes are encountered. When the root final and suffix initial syllables are unstressed, the root final syllable receives the stress. The root precedes the suffixes.

55) gó-bo "I go" gó-bópa "I go (declar.)"
gó-tabópa "I went" gó-támõnápa "we went"
wæ̂ -ŋa "he dies" kíwẽŋó-ŋa "where he lives"
p ǽdæ pőnõ-kâmba "he handed it over"
bódæ póka "ant hill" kǽ ga-kámba "his tooth hurts"
á-kámba "he sees" yíwæ̃ mő-ŋâmba "he carves"
tíkawódõnó-kâmba "he lights"
wódõ-ŋâ "she hangs up"
ê̞ŋá-kandápa "he was born"
gânæ̂ æ̂ -ŋã "he raised up his arms"

The description of these two stress processes clearly cannot be accomplished with a single stress rule. The stress train found on the suffixes is assigned by the following rule.

56) $V \geq [+\text{stress}] \; / \; \underline{\quad} C_0 \begin{bmatrix} -\text{stress} \\ +\text{suffix} \end{bmatrix} V$

This rule will not only account for the alternating stress pattern contained entirely within the suffix-sequence, it also can explain the presence of the root final stress whenever the initial suffix syllable is unstressed. When rule (56) applies to underlying ẽɲa-kandapu, it first assigns stress to the penultimate vowel, since that vowel is the first one followed by an unstressed suffix vowel, yielding ẽɲa-kandápu. The rule then reapplies to the final vowel of the root, since that vowel is followed by an unstressed suffix vowel. No other stresses may be assigned by (56), since no other unstressed suffix vowels are available to trigger stress assignment.

The second wave train requires at least one more rule; I shall assume that two are required, one to assign stress to the first vowel of the word and a second to copy that stress on alternating syllables.

57) $V \geq [+\text{stress}] \; / \#C_0 \underline{\quad}$

58) $V \geq [+\text{stress}] \; / \; \acute{V} \, C_0 \, V \, C_0 \underline{\quad}$

Rule (57) will apply to underlying bodæpoka, yielding bódæpoka. The alternating rule (58) will then apply to that output and give the phonetic form bódæpóka. The suffixal stress train rule must apply before the alternating stress rule (58) so that after the suffixal rule has applied, derived pædæpõnõ-ɲãmba undergoes first the initial stress rule (yielding pǽdæpõnõ-ɲãmba) which then undergoes rule (58) to give pǽdæpõnõ-ɲãmba. If the alternating rule (58) were to apply before the suffixal stress train rule (56), the stresses assigned by that rule would spread into the suffixes, yielding incorrect *á-kambá instead of á-kámba. By modifying the formulation of the alternating rule (58) so that only root vowels can serve as focus, this problem is eliminated. However, this complication of (58) is simply unnecessary if we order (56) before (58).

I shall now discuss the stress system of three languages which have a different variety of complexity in their alternating stress rule: in these languages, the stress rule optionally skips two unstressed syllables rather than one. In Mantjiltjara, main stress falls on the initial vowel of the word. Alternating stresses appear on succeeding nonfinal syllables, either a single unstressed syllable or two unstressed syllables are allowed to intervene between stresses (Marsh, 1969).

59)	yápu	"store"	ṭářka	"bone"
	ŋákumpa	"deaf"	wálpukùřu	"tall"
	ṛákaṛàka	"brave"	yíkařiwa	"laugh"
	pářpakala	"fly"	wáyiŋkàtiŋu	"he arrived"
	ŋákuljùkulju	"the Pleades	kúwařiŋànu	"from this time"

pákalkuṛàku "let him come out"

kápukùřiṇànta "I dreamed of you"

káninjtjàřatjànu "from inside"

wúṛultjànjanja "organize them!"

ŋúřilpàyilitjùŋku "we (pl. excl) were looking for you"

ṇíntitjùlatjànanja "inform them!"

káyiliřìŋulàtju "we (pl.excl.) went north"

It should be noticed that the optional skipping of two vowels rather than one need not be observed throughout all syllables in the word at the same time, cf. ŋúřilpàyilitjùŋku, where the first alternating stress is separated from the main stress by one syllable, but the second is separated by two. That is, it would not be feasible to posit two distinct versions of the alternating stress rule, one which copies stresses in the environment $\acute{V}\ C_{o}\ V\ C\_\_$ and a second which copies stresses in the environment of $\acute{V}\ C_{o}\ V\ C_{o}\ V\ C_{o}\_\_$ The option of skipping one or two syllables must be incorporated into the alternating stress rule. It should also be noticed that since final vowels are not stressed, if the option of skipping two vowels rather than one is selected in a four syllable word, no alternating stress at all will be found in the word, as in pářpakala. This poses a problem for the formal description of the alternating stress rule.

The Alternating Stress rule is not optional, since an alternating stress is present on every word of five or more syllables. If the decision is made to select the longest version of the stress copying rule, i.e. with the environment $V C_{o} V C_{o} V C\_\_\_\_ C_{o} V$, the form pářpakala does not satisfy the conditions of that rule and the alternating stress rule does not apply. The theory does not contain any apparatus that describes optional variants of a single rule. A more articulated theory of optional rules would allow us to determine whether the formal problem encountered in Mantjaltjara of blocking the obligatory alternating stress rule by selecting the longest version of that rule is a real problem, or only an apparent one. The outstanding problem is to determine why it is that when the longer expansion fails to be satisfied, the shorter expansion is not then obligatorily applied.

The stress system of Walmatjari as described by Hudson and Richards (1964) is similar to that of Mantjiltjara, in that two syllables can be optionally skipped in the alternation of stresses. It differs from that language in the crucial respect that four syllable words apparently require the presence of an alternating stress. Therefore, the possibility of skipping two syllables in the alternating stress rule is available only in words of five syllables or longer. An additional difference is that the main stress may optionally appear on the second syllable of the word rather than on the first if that syllable is nonfinal; alternating stesses are then calculated from this point.

60) yápa "child" pálma "creek"
káŋani ~kaŋáni "carried"
máṇalu ~maṇálu "we...him"
yútanti ~ yutánti "sit!"
ŋákaljàlja "cockatoo" tjíninjàra "midday"
páljmanàna ~ paljmánana "touching"

ṭúnmanàna ~ ṭunmánana "burying"
wálakuwàṇti "sews" yúřatinjàna "drowning"
njúmukutjiṇi ~ njúmukùtjiṇi "caused to bathe"

Unfortunately, the description given by Hudson and Richards provides no examples of longer words, so that the interaction of the optional second syllable main stress and the option of skipping two syllables found in the alternating stress rule may be observed.

The stress system of Malakmalak is of interest because stress is placed on the initial syllable of words having 1, 2, 3, 4 and 6 syllables, but on the second syllable of words containing 5 and 7 syllables. Alternating stresses occur on every other syllable after the main syllable, including on the last syllable (Birk, 1976).

61) ẏ́ontö̀n "he" tyáŋar "appear"
álawàr "woman" mélpapù "father"
mútyuřwùnu "very much" múnankàra "beautiful"
tyɛtwɛ́řamàŋkil "fork stick"
aŋkíniyàŋka "you and I will stand"
ařkíniyàŋka "we all will stand"
aŋkö̀nö́yùŋka "you and I will lie down"
nökörönöyùŋka "you (pl) will lie down"
wuwúntunùnuwàka "would have given meat"

A possible explanation for this highly peculiar stress system is the fact that it guarantees a stress on the penultimate vowel in every word (except for trisyllabic words). However, I cannot see any straight-forward way to incorporate the stress pattern of 5 and 7 syllable words into a concise formulation of the facts, even employing two rules for assigning main and secondary stresses.

It has been argues above that there are a number of cases where main stress assignment and alternating stress assignment are governed by different rules. This point is most forcefully demonstrated by languages such as Zulu and Piro, where main stress and alternating stress are calculated from different ends of the word. The separateness of these processes is demonstrated in other languages by the fact that one rule, but not the other, may be subject to a more complicated set of conditions.

III. Conclusions

In the above sections, I have argued two points; that main stress assignment often requires two rules, rather than one, which are disjunctively ordered but not formally abbreviable, and that main and alternating stress can require two separate rules for their individual description. There can be no doubt that the atomistic approach towards stress assignment is necessary for describing languages such as Mongolian or Zulu; the question of how to account for languages such as Komi Jazva remains open. That language can be described with a single rule or with two rules; and although there is no evidence that the two cases of stress assignment are governed by different rules, there is also no evidence that they are governed by the same rule.

There can be no doubt that parenthesis notation abbreviates disjunctively

ordered sets of rules, and that the longest rule applies first. This point has been unambiguously shown in Kiparsky (1968) and Phelps (1974), where rules other than stress assignment are used to show the necessity of these conclusions. The foregoing study shows, inter alia, that rules of stress assignment do not make the most convincing case for parenthesis notation.

I have shown above that a language may have a number of different conditions on stress assignment; for example, stress may fall on the first mora of a long vowel or an identical vowel sequence separated by glottal stop (Tubatulabal, Tondano); it may fall on the first element of a diphthong rather than on the last (Tondano, Warao); it may fall further back on the word than expected if the word is long enough (Tupi, Tondano); it may avoid stressing schwa by stressing a different syllable than expected (Indonesian, Tondano). Strong versus weak syllables may be defined in different ways; long vowels alone are strong in Tibetan, long vowels and diphthongs are strong in Mongolian and Tahitian, long vowels diphthongs and consonant clusters constitute strong syllables in Lake Miwok and Yana, and non-schwa vowels are strong in Indonesian and Lushootseed.

In summary, since the atomistic approach to stress assignment gives a better characterization of possible stress rules than an approach employing a single stress assignment rule in a language, the atomistic approach is to be prefered on crosslinguistic grounds.

NOTES

*I would like to thank Mike Kenstowicz and Chuck Kisseberth for valuable comments and criticisms on the earlier version of this paper. I would also like to thank Nawang Nornang for providing the Tibetan data, and Tom Hess and Vi Hilbert for providing the Lushootseed data.

REFERENCES

ABRAHAMSON, A. 1968. Contrastive distribution of phoneme classes in Icua Tupi. Anthropological Linguistics 10.
BIRK, D. 1976. The Malakmalak language. Pacific Linguistics, series B. No. 45.
CALLAGHAN, C. 1965. Lake Miwok dictionary. University of California publications in linguistics, vol. 34.
CHOMSKY, N. and M. Halle. 1968. The sound pattern of English. Harper and Row: New York.
DOKE, C. 1926. The phonetics of the Zulu language. Bantu Studies, Vol. 12.
HOWARD, I. 1973. A directional theory of rule application in phonology. PhD dissertation: MIT.
HUDSON, J. and E. Richards, 1969. The phonology of Walmatjari. Oceanic Linguistics, 8:2.
HYMAN, L. 1975. On the nature of linguistic stress. In Studies in Stress and Accent, SCOPIL 4.
KALECTACA, M. 1978. Lessons in Hopi. University of Arizona Press, Tucson.
KIPARSKY, P. 1968. How abstract is phonology? Unpublished ms.
KIPARSKY, P. 1973. Elsewhere in phonology. In Festschrift for Morris Halle. Holt, Rhinehart and Winston: New York.
LEVINSOHN, S. 1976. The Inga Language. Mouton: The Hague.
MARSH, J. 1969. Mantjiltjara phonology. Oceanic Linguistics 8:2.

MATTESON, E. 1966. The Piro (Arawakau) Language. University of California publications in linguistics, vol 42.
OSBORNE, H. 1962. Warao Phonology and Morphology. Ph.D dissertation: Indiana University.
PHELPS, E. 1974. Iteration and disjunctive domains in phonology. Linguistic Analysis, 1.137-172.
PIKE, K. 1964. Stress trains in Auca, in In Honor of Daniel Jones.
POPPE, N. 1951. Khalkha-Mongolische Grammatik. Otto Harrassowitz: Wiesbaden.
SAPIR, E. and M. Swadesh, 1960. Yana Dictionary. University of California publications in linguistics, vol 22.
SNEDDON, J. 1975. Tondano Phonology and Morphonology. Pacific Linguistics serier B, no. 38.
TRYON, D. 1970. Conversational Tahitian. University of California Press: Berkely.
VOEGLIN, C. 1935. Tubatulabal Grammar. University of California Publications in American Archaeology and Ethnology, vol. 34.
WOLFF, J. Beginning Indonesian. Cornell University Press: Ithaca.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

THE ACQUISITION OF CHINESE BY ADULT ENGLISH SPEAKERS: AN ERROR ANALYSIS*

Paula Chen Rohrbach

This study investigates some of the common errors made by American university students learning Chinese. Interference errors are found to be made by both the beginning and advanced students, though they are not the same in nature. In addition, intralingual errors are also found. The types of errors reflect the level of competence of the students. Based on the fact that beginning students make more 'serious' errors than advanced students, a hierarchical scale of seriousness of errors is established. Though there is no clear-cut division in all of the error types, a rough guideline can be drawn. A detailed analysis further shows that within the same type of error, errors belonging to beginning students are generally in violation of basic constructions while those of the advanced students are mainly due to incorrect selection of lexical items. From the findings, suggestions are made to improve teaching techniques and materials to help eliminate some of the errors.

INTRODUCTION

The purpose of this study is to find, by means of an error analysis, some problem areas adult American students find themselves facing when learning Chinese. Since the main concern here is the syntactic and semantic problems, the phonological aspects are disregarded. It is hoped that this simplification will render a clearer and more manageable analysis dealing only with the problems under consideration.

Two sets of data were collected from students of Chinese at Indiana University in 1974—one from the beginning level and the other from the advanced level. While longitudinal data were impossible to collect over a short period of time, the use of these two groups was an attempt to produce a longitudinal effect in classifying the errors.

The goal of this study is to classify the errors made and to see if they can be ordered according to 'seriousness', i.e. levels of comprehensibility. It is further hoped that the analysis will show whether the way in which materials are presented has any correlation with students' difficulties in certain patterns, and thus will reveal possible solutions to at least some problem areas.

PROCEDURE

Subjects. The subjects consisted of two groups of American students, eight from the beginning level (six male, two female) and seven from the advanced level (five male, two female). The ages ranged from 18 to 27, with undergraduates in the beginning class and mostly graduate students

in the advanced class. Most of the beginning students had not studied Chinese before with the exception of one who had some formal training in the language but decided to start from the beginning again. The advanced group consisted of students of slightly varied backgrounds (in terms of previous training in Chinese) but the differences can be disregarded for the purpose of this study.

Data. The data consisted of short stories given by individual beginning students and dialogues delivered by pairs of the advanced group. Both types of presentations were done orally in class and recorded on a free-style basis in order to capture spontaneity (although the advanced students prepared their dialogues beforehand and could refer to notes while speaking). One of the defects of this approach is that the students only used patterns they were sure of and, thus, did not show all the areas in which they had difficulties.

RESULTS

The data collected are tabulated (see Table 1) in the following fashion: (1) the students listed by level of study and by number (with specification as to male or female); (2) total number of sentences used in speech; (3) total number of errors found (each sentence may contain more than one error); (4) types of errors classified with the frequency of each type indicated; and (5) number of errors per sentence.[1] The beginning students are listed in the top half of the table in descending order with respect to the number of errors per sentence. The advanced students are listed similarly in the bottom half of the table. Error types are arranged in such a way that the errors most frequently made by beginning students are grouped together. A similar arrangement is followed for the advanced students.

ANALYSIS OF RESULTS

Though it is not apparent from Table 1, it is to be expected that the speeches of beginning students consist of fewer, shorter, and less complex sentences than those of the advanced students. Many of their sentences are, in fact, broken segments. For the beginning group, the longest speech has 42 sentences, and the shortest has 9 sentences. Number of errors per sentence ranges from 0.78 to 0.14. For the advanced group, the longest speech has 53 sentences, and the shortest has 21 sentences. Number of errors per sentence ranges from 0.32 to 0.08.

Errors Classified. The errors are divided into eight types: (I) interference (English syntax and Chinese lexicon); (II) interference (Chinese syntax and English lexical items substituted for Chinese equivalents unknown to the student); (III) failure of rule application; (IV) overgeneralization; (V) false concept hypothesized; (VI) ignorance of rule restriction[2]; (VII) interference (Chinese syntax and incorrect Chinese lexical items resulting from direct translation of English equivalents); and (VIII) performance errors.

Each type or error is analyzed with a few typical examples. The deviant utterances are given in the following fashion: (1) the intended

TABLE 1

Student	Number of sentences	Number of errors	Error types								Errors per sentence
			I	II	III	IV	V	VI	VII	VIII	
B.L.1(M)	9	7	3		1	1	2				0.78
B.L.2(M)	27	19	8	1	3	3	4				0.70
B.L.3(M)	21	11	3	1	1		5			1	0.52
B.L.4(M)	18	9	3			3	3				0.50
B.L.5(F)	23	9	2	1	1		5				0.39
B.L.6(M)	22	6			1	2	2	1			0.27
B.L.7(F)	42	10	4	2			4				0.24
B.L.8(M)	37	5				2	2			1	0.14
A.L.1(M)	53	17			4		9	2	2		0.32
A.L.2(M)	33	7				1	4			2	0.21
A.L.3(F)	28	4			1		2		1		0.14
A.L.4(M)	21	3					1	1	1		0.14
A.L.5(M)	30	3			1		1	1			0.10
A.L.6(M)	36	3				1		2			0.08
A.L.7(F)	24	2					1	1			0.08

B.L.-beginning level, A.L.-advanced level, M-male, F-female

(Refer to text for description of error types)

utterance in English; (2) the utterance produced by the student with an asterisk indicating that it is ungrammatical—Pinyin romanization is used; (3) a word for word translation (with grammatical categories provided where necessary) of the wrong utterance into English; (4) the correct Chinese utterance; (5) word for word translation of the correct utterance; and (6) analysis of the possible reason for the error.

The following abbreviations for grammatical categories are used: ASP —aspect marker, CV—coverb, EV—equative verb, INT—interjection, LS—locative suffix, LV—locative verb, M—measure, MP—modification particle, OP—object preposer, RVE--resultative verb ending.

I. Interference (English syntax and Chinese lexicon)

(1) I was in my room by myself.

*Wǒ zài wǒde wūzi zìjǐ.
I LV I-MP room self

Wǒ yígè rén zài wǒde wūzili.
I one-M person LV I-MP room-LS

(2) Her mother was on the phone.

*Tāde mǔqin zài diànhùa.
She-MP mother LV telephone

Tāde mǔqin gěi tā dǎ diànhùa.
She-MP mother CV her beat telephone
(Her mother called her on the telephone)

(3) ...so I'll have to look for a place to live for only six months.

*...suǒyǐ wǒ děi zhǎo yígè difǎng zhù jiu liùgè yuè.
so I must look-for one-M place live six-M month

...suǒyǐ wǒ děi zhǎo yígè difǎng zhǐ zhù liùgè yuè.
so I must look for one-M place only live six-M month

Sentences (1)-(3) are extreme cases where the students used complete English syntax and merely strung together the Chinese words into their English sentences. This word for word calquing has left little doubt that these are interference errors. Only the beginning students made this type of error.

(4) I must study a lot.

*Wǒ děi nìanshū hěn duō.
I must study-book very many

Wǒ děi nìan hěn duō shū.
I must study very many book

(5) We have moved seven or eight times.

*Wǒmen bānjīa qī-bā cì.
We move-house seven-eight time

Wǒmen bānlè qī-bā cì jīa.
We move-ASP seven-eight time house

Sentences (4) and (5) are rather interesting and are common errors of the beginning students. In English, verbs such as 'study', 'teach', 'drink' etc. have their deep structure objects deleted on the surface. Many native speakers of English consider these verbs in 'I must study', 'I teach', 'He drinks',etc. to be intransitive but in 'I study Chinese', 'I teach English', 'He drinks Brandy', etc. to be transitive. With this

concept in mind, these students reject the Chinese verb-object compounds and deal with them either by deleting the objects as in English (e.g. *Wǒ děi nián—I must study) or treating the verb-object compounds as verbs only (e.g. *Wǒ děi niànshū hěn duō—I must study-book very many), not realizing that the correct way is to break up the verb-object compounds and place the quantifiers before the objects (e.g. Wǒ děi nián hěn duō shū —I must study very many book).

II. Interference (Chinese syntax and English lexical items substituted for Chinese equivalents unknown to the student)

(6) I then squeezed my kitten.

*Wǒ jiù squeezed wǒde xiǎo māor.
I then squeezed I-MP small cat

Wǒ jiù niē wǒde xiǎo māor.
I then squeeze I-MP small cat

(7) This a a dangerous matter.

*Zhèi shì dangerous-de shìqing.
This EV dangerous-MP matter

Zhèi shì wēixiǎn-de shìqing.
This EV dangerous-MP matter

(8) Before he can work, he must pass a big exam.

*Tā kěyi zuòshì yǐqián,děi pass yíge dà-de kǎoshì.
He may work before must pass one-M big-MP exam

Tā zuòshì yǐqián, bìděi xiān tōngguò yíge hěn zhòngyào-de kǎoshì.
He work before must first pass one-M very important exam

In these cases, the students used the Chinese syntax and substituted English words for those Chinese forms they did not know, However, it is interesting to note that the sentence structures in Chinese are very close to the corresponding structures in English. So the students could have been calquing word for word again, except this time, they happened to coincide with the Chinese structures. In fact, sentence (8) has a preferable structure: 'Tā bìděi xiān tōngguò yíge hěn zhòngyào de kǎoshì cái néng zuòshì He must first pass a very important exam, then and only then he can work'. It is interesting that none of the advanced students used this strategy. Instead, they translated the intended English lexical items incorrectly into what they thought to be Chinese equivalents (see interference below).

III. Failure of Rule Application

(9) I was in my room by myself.

*Wǒ zài wǒde wūzi zìjǐ.
I LV I-MP room self

Wǒ yígè rén zài wòde wūzilǐ.
I one-M person LV I-MP room-LS

(10) They dragged me out of (from) bed.

*Tāmen cóng chuáng ná wǒ.
They from bed take me

Tāmen bǎ wǒ cóng chuángshàng lā qǐlai.
They OP I from bed-LS pull up

In locative and directional sentences, in order to turn a noun into a location, a locative suffix is needed after the noun (though there are exceptions). In sentences (9) and (10), the students failed to apply the locative suffix rule.

(11) two months ago

*liǎng yuè yǐqían
two month ago

liǎnggè yuè yǐqían
two-M month ago

In Chinese, a measure word is required whenever there is a number before the noun. In (11) above, the student failed to apply the rule which inserts the measure word 'gè' between the number and the noun.

IV. Overgeneralization

(12) ...buy a new pair of shoes.

*...mǎi yígè xīnshuāng píxie.
buy one-M$_1$ new-M$_2$ shoes

...mǎi yìshuāng xīn píxie.
buy one-M new shoes

Measures in Chinese occur after either numbers or specifiers and before nouns. The student overgeneralized the measure insertion rule in two ways: 1) by applying it to give a measure 'shuāng' after the adjectival 'xīn' (instead of the number); and 2) by applying the rule again to place the general measure'gè' after the number 'yí'. As a result, there are two measures for one noun. Another explanation for this error could be interference where 'a new pair' is translated as 'yígè xīnshuāng', after applying the measure insertion rule to insert 'gè'.

(13) But I wanted to sleep for ten more minutes.

*Kěshì wǒ hái yào shuìle shí fēn zhōng.
But I still want sleep-ASP ten-M o'clock

Kěshì wǒ hái yào shuì shí fēn zhōng.
But I still want sleep ten-M o'clock

(14) But I slept very deeply (soundly).

*Kěshì wǒ shuìlè hěn shēn.
But I sleep-ASP very deep

Kěshì wǒ shuìdé hěn shóu.
But I sleep-MP very ripe

(15) ...the effect of animals and provision is also the same.

*...dòngwù gēn liángshí shòulè yíngxiang yě yíyàng.
animal and provision receive-ASP influence also same

...dòngwù gēn liángshí shòudé yíngxiang yě yíyàng.
animal and provision receive-MP influence also same.

'Lè' is one of the most difficult particles for students to grasp, for it has numerous functional meanings.[3] It is classified as an aspect marker which, among other functions, emphasizes the completion of action in action verbs and a change in non-action verbs. Students are usually warned against treating it as a past tense marker. However, many still use it as such. This is because when they have no definite guideline to follow, they tend to fall back on something that is similar to the 'lè' function in their own language, namely, the past tense marker. In sentence (13), however, the student was obviously not making an error of interference, because the past tense marker in English is attached to the verb 'want', but he placed the 'lè' after the verb 'shuì—sleep' instead. So this is an overgeneralization on the use of 'lè'. The same explanation can be given to sentence (14), except in this case, the appropriate pattern is the manner pattern with the use of manner (modification) particle 'dé'. Even advanced students made errors of this type, e.g. the long and sophisticated sentence in (15), where the 'lè' should be substituted by the modification particle 'dé'. These errors can also be explained as falsely conceptualized use of 'lè'.

V. False Concept Hypothesized

This is the category with the greatest overlap between the two groups of students. It may be helpful to divide the errors into two subtypes—those in violation of grammatical rules and those in violation of semantic and functional meaning of lexical items. Almost all of the first subtype are made by the beginning students while the second subtype occurs in both groups, more so by the advanced students.

(16) We moved to New York.

*Wǒmen dào Niu-Yuē bānjīa.
We to New York move-house

Wǒmen bāndào Niu-Yuē qù.
We move-to New York go

(17) When I went to the kitchen...

*Wǒ dào chúfáng zǒu de shíhòu...
I to kitchen walk-MP time

Wǒ dào chúfáng qù de shíhòu...
I to kitchen go-MP time

(18) "...go to Cave X" (undecipherable proper name)
"No! No!"

*"...dào Cave X"
to cave X
*"Búdào! Búdào!"
Not-to Not-to

"...dào Cave X qù."
to cave X go
"Búqù! Búqù!"
Not go Not-go

All of the three sentences above are the result of misconceptualizing the directional pattern 'dào...qù'. In sentence (16), the student did not know that 'dào' can be used as a verb suffix, e.g. 'bāndào...—move to...' She also did not know that the object 'jīa' in 'bānjīa' is to be deleted in this kind of sentence. An interesting outcome of this error (probably unknown to the student) is that the sentence she uttered could mean: 'We go to New York for the purpose of moving'. In sentence (17), the student was confused about the usages of 'qù--go' and 'zǒu—walk or leave'. When he was not sure of the 'dào...qù' pattern, he picked 'zǒu' instead of 'qù' in applying the pattern. In sentence (18), the student was probably confused about the 'dào...qù' pattern with the verb 'dào—to arrive'. Since they are the same word, he used 'dào' as the main verb in the sentence. Thus the response in the discourse became *'Búdào! Búdào!'

As mentioned above, sentences (13), (14) and (15) classified under overgeneralization can also be analyzed in this category. They show that the students were not sure about the concept behind the 'le' patterns and used the aspect particle in wrong places.

(19) They dragged me out of (from) bed.

*Tāmen cóng chuáng ná wǒ.
They from bed take I

Tāmen bǎ wǒ cóng chuángshang lā qǐlai.
They OP I from bed-LS pull up

(20) I was in my room by myself.

*Wǒ zài wǒde wūzi zìjǐ.
I LV I-MP room self

Wǒ yígè rén zài wǒde wūzili.
I one-M person LV I-MP room LS

(21) I alone do not have one.

*Wǒ zìjǐ méiyǒu.
I self not-have.

(Jǐushì) wǒ yígè rén méiyǒu.
(Only) I one M-person not-have

(22) Later, we can discuss it.

*Hòulái, wǒmen tǎolùn yíxià.
After-that (for past events) we discuss a-little

Yǐhòu wǒmen zài tǎolùn.
Later (for both past and future events) we again discuss

(23) ...talk, dance, etc....

*...shuōhuà, tiàowǔ, dèngyídèng...
talk dance wait-one-wait

...shuōhuà, tiàowǔ, děngděng...
talk dance etc.

(24) So either December or next January I...

*Suǒyǐ wǒ shíèr yuè háishì míngnián yíyuè...
So I December or next year January

Suǒyǐ wǒ shíèr yuè huòshì míngnián yíyuè...
So I December or next year January

(25) I didn't get up until sleeping till 9:15.

*Wǒ shuìdào jiǔdiǎn yíkè zhōng jiù qǐlái.
I sleep-till nine-M quarter o'clock then get-up

Wǒ shuìdào jiǔdiǎn yíkè zhōng cái qǐlái.
I sleep-till nine-M quarter o'clock only-then get-up

Sentences (19)-(25) are examples of lexical items being misused. In sentence (19), 'ná' only refers to an action of picking up something small whereas 'lā' means 'to pull'. In (20) and (21), the usages of 'zìjǐ—self' and 'yígè rén—alone' is confused. In (22), 'hòulái' is only used to refer to past events while 'yǐhòu' can be used for both. In (23), when 'dèng' is reduplicated with 'yí' in the middle of the reduplication, it can only have the meaning of 'wait a while', which is completely different from the special meaning of 'děngděng—et cetera' the student intended. In (24), 'háishì' means 'or' in a question whereas 'huòshì' means 'or' in a statement. In (25), 'jiù' implies that the action takes place earlier than one expects while 'cái' reverses the implication to later than one expects. These concepts are difficult to grasp and students often get them confused. Perhaps related concepts like the ones in (24) and (25) should not be introduced together so as to avoid confusion.

VI. Ignorance of Rule Restriction

(26) policeman

*jǐngchá de rén
police MP person

jǐngchá
police(man)

This type of error is a special type of overgeneralization. Rather than applying a certain rule to non-applicable constructions, students who made this kind of error are not aware of the restrictions and constraints on the rule. In (26), the student did not realize that the word 'jǐngchá' already has the feature [+human] in it, thus blocking the application of the rule which enables one to form constructions of the type: 'people who ...' merely by adding '...de rén' at the end of the phrase. For example, 'xúe Zhōngwén' means 'study Chinese', but 'xúe Zhōngwén de rén' means 'people who study Chinese'. Similarly, 'Zhōngguó' means 'China', but 'Zhōngguó de rén' means 'people of China' etc.

(27) ...all contract infectious diseases

*...dōu shòu chúanrǎn bìng.
all receive infectious disease

...dōu dé chúanrǎn bìng.
all get infectious disease

'Shòu' meaning 'receive' is used in many phrases such as 'shòu huānyíng—receive welcome'; 'shòu yíngxiǎng—be influenced' and 'shòu zuì—receive suffering' etc. The student extended the use to *'shòu chúanrǎn bìng—receive infectious desease', which is not too different from 'shòu zuì'. In other words, the student was not aware of the restriction on the pattern.

(28) You will always prefer to make friends with Americans...

*Nǐ zǒngshì nìngkě gēn Měiguó rén láiwǎng.
You always rather CV American person come-go

Nǐ zǒngshì bǐjiào xǐhuān gēn Měiguó rén láiwǎng.
You always comparatively like CV American person come-go

This is a rather sophisticated error. The student did not know that the pattern is restricted in usage: 'nìngkě... (yě)...' usually refers to sacrificing something more desirable to do something less desirable. He was not aware of the subtle difference in implication between this pattern and what he meant to say. This error can also be classified under false concept hypothesized for he probably had a false concept about the meaning of this pattern.

VII. Interference (Chinese syntax and incorrect Chinese lexical items resulting from direct translation of English equivalents)

While the other two types of interference errors are mainly made by beginning students, this type belongs to the advanced students. The errors are mostly those of lexical items resulting from some kind of semantic feature violation. In some cases, the error is so subtle that the sentence seems alright if uttered in a different context.

(29) Everybody has a father.

*Rénrén dōu yǒu yígè bàbā.
Person-person all have one-M father

Rénrén dōu yǒu bàbā.
Person-person all have father

Sentence (29) is not wrong on grammatical grounds, but is wrong based on the meaning of 'yígè', because it conveys the meaning of 'Everybody has one father', not two or three or any other number. The English equivalent of this sentence takes an 'a' in front of the noun. This failure to distinguish between 'a' and 'one' in Chinese is a very common phonomenon.

(30) I thought (mistakenly) that country people did not need to use money!

*Wǒ xiǎng xiāngxià rén búbì yòng qián a!
I think village person not-must use money INT

Wǒ yǐwéi xiāngxià rén búbì yòng qián a!
I thought (mistakenly) village person not-must use mony INT

In English, the same word is used for both 'thought' and 'thought mistakenly' whereas in Chinese, different words are used to express these different ideas. The student fell back on the non-distinction in his native language.

(31) Then I'll come back and speak Chinese with you...

*Nàmma wǒ jiù huílai gēn nǐ jiǎng Zhōngguó huà...
Then I then return-come CV you speak Chinese speech

Děng wǒ huílai yǐhòu gēn nǐ jiǎng Zhōngguó huà...
Wait I return-come after CV you speak Chinese speech
(Wait till I come back and speak Chinese with you...)

The error in (31) is so subtle that just glancing at the sentence itself shows that there is nothing wrong with it. But in the context it is clear that the student meant to use the word 'jiù' to convey the temporal 'then' in English. However, the 'jiù' in the sentence she gave has the following two possible meanings: 1) the conditional 'yàoshi!... jiù—if...then' sentence or 2) the '...le...jiù...—after...then...' or 'yí...jiù...—as soon as...then...' sentences both of which convey the meaning of something happenning soon after something else. Neither of these is the intended meaning of the student.

VI. Performance Errors

(32) the same as a pls

*gēn jùxí yíyàng
CV play same

gēn xíjù yíyàng
CV play same

(33) The story is about a man...

*Gùshi shì guānxí yígè nánrén...
Story EV relation one-M man

Gùshi shì guānyú yígè nánrén...
Story EV about one-M man

Performance errors are usually caused by slip of the tongue. However, the above errors could also be caused by the students' not having securely placed the lexical items in their memory. Sentence (32) shows that the student metathesized the two syllables in the compound, which is a common slip of the tongue phonomenon. In (33), the incorrect word has a common syllable with the correct one, thus a slip of the tongue could have caused the error here too. However, another possible reason for this error is that the student was not sure about the difference between these two words (false conceptualization of the usage and meaning of these words), and thus could not remember which was which.

DISCUSSION

From Table 1, it can be seen that the error types of beginning students are predominately Type I—interference (English syntax and Chinese lexicon), Type II—interference (Chinese syntax and English lexicon), Type III—failure of rule application, Type IV—overgeneralization, and Type V—false concept hypothesized. Type I includes the least comprehensible errors. The listener could not tell what was being said without guessing from the English equivalent. This kind of interference is ranked lowest on the scale of proficiency level. Beginning students who experience considerable difficulty often make errors of this type. Type II shows a higher level of proficiency. The speakers knew the Chinese syntax but lacked the Chinese vocabulary necessary to express themselves and resorted to English lexical items. Type III are errors resulting from imperfect understanding of certain patterns. The students failed to apply the necessary insertion rules to produce the intended utterance. Type IV errors show that the students had learned certain rules but then applied them 'over-enthusiastically' and inappropriately. A conspicuous example is the overgeneralized use of the aspect marker 'le'. Type V seems to consist of a large number of errors from both levels of students, usually as a result of falsely conceptualizing a certain pattern or lexical item. Levels are distinguished in that beginning students usually falsely conceptualized rules while advanced students made errors on the lexical level.

Errors made by advanced students cluster around Type V—false concept hypothesized, Type VI—ignorance of rule restriction, Type VII—incorrect use of Chinese lexical items as a result of direct translation of English equivalents, an interference type of error, and Type VIII—performance

errors. Type V errors of advanced students are mostly caused by misconceptions in the meaning and usage of lexical items rather than on rules. Type VI errors are more sophisticated. They are similar to overgeneralization errors with the following difference: in overgeneralization, students extend the application of a certain rule to structures which do not undergo the rule; in ignorance of rule restriction, the students by and large know when and how to apply the rule but are not aware of its restriction in special cases. Usually, these restrictions are idiosyncratic and are subject to language specific elements in the sentences. Students who make errors of this type are rather advanced in their learning process, for these errors are in general due to ignorance of more subtle aspects of the linguistic system of the language. Type VII are interference errors on lexical items only. It seems that such errors are inevitable even if the students are quite proficient in Chinese, because the ability to recognize subtle semantic differences between words is acquired only after prolonged contact with Chinese speakers away from one's native environment. Type VIII are performance errors which are not really related to the internal process of language learning. However, it is noteworthy that these were errors on lexical items only. It may just mean that the students did not store these items securely in memory.

In addition to the errors discussed in this paper, there were found a few errors which cannot be analyzed without going beyond the scope of the sentence—into discourse analysis. In fact, even some of the sentences discussed are difficult to analyze without looking at the context. One particularly interesting example follows: The student was talking about going to a shoe store to buy shoes. He said, 'Suǒyǐ wǒ dào xié pùzi qù mǎi . . . Kěshì tā méiyǒu . . .' It means 'So I went to a shoe store to buy . . . But he didn't have . . .' The use of presupposed 'he' is allowed in English but not in Chinese.

CONCLUSION

The above is a very general guideline to rank the types of errors in terms of their 'seriousness' and their indication of proficiency level. The overall picture of these errors can help to reveal some facts about the 'interlanguage' of adult classroom learners of Chinese.

In the restricted and artificial environment in which the students were placed, their learning of the language was a function of the confinements such as time, materials, methods, teachers and all the other factors involved in learning and testing. Moreover, as all Chinese instructional materials were (and still are) introduced and explained in English (unlike the Fries and Lado series in English), excessive interference from English became an inevitable part of all classroom learning situations.

Children, who learn a second language, have not reached neurological and cognitive maturation and therefore are confronted with less interference of experience. Adult learners, on the other hand, are cognitively mature and are full of cultural and conceptual biases. They tend to rely on their previous experience to guide them in judging semantic or logical issues in their target languages. This falling back upon the linguistic framework with which the learners are more familiar—their native languages

—is what Newmark and Reibel (1968) describe as interference. In other words, interference is a 'crutch' used by learners only when they are unsure of the system in the target language. The intralingual errors mark the stages of target language learning without interference from the mother tongue. These stages are those characterized by Selinker (1972) as 'interlanguage' and analyzed by Richards and others by means of error analysis.

One of the ways the teacher can help overcome some of the problems is to improve instructional ordering and techniques. There is some evidence that instructional procedure may contribute to certain errors. For example, it may be that the order of instruction of patterns caused the error in sentence (24) above. The use of 'háishi' and the use of 'huòshi' are introduced together with the intention of revealing the contrast and, thus, facilitating learning. The error may suggest that the opposite is true. If only one of the words is introduced and the other left until the student has acquired a solid grasp of the use of the first, confusion of the two may be avoided. Similarly, the use of 'jiù' and 'cái' can be taught separately. Grammatical patterns should be treated likewise—easily confused patterns, as well as lexical items, should be taught separately.

Another area which may prove useful is the introduction of linguistic concepts in the classroom. (Many students do not know the parts of speech defined by traditional grammarians.) It may be assumed that understanding the ways (grammar) one's own language works can help one in learning a second language. However, understanding one's language does not necessarily mean knowing the linguistic analysis of the language. It simply means having an awareness (sensitivity) toward the language. This may also explain why people who know more than one language can learn a new one more easily. If there are indeed linguistic universals, the students may find a more reliable 'crutch' (the universal model) to fall back on than their native language and therefore can reduce interference errors as well as some of the intralingual errors.

NOTES

*I wish to thank Professor Harry Gradman of Indiana University for past encouragement. For present encouragement, my sincere thanks to Professor Chin-Chuan Cheng who patiently provided guidance on format and content, and to Professors Eyamba Bokamba, Richard Chang, and Yamuna Kachru who offered suggestions in the analysis of errors. Lastly, thanks to my former students at Indiana who made the data available.

[1]The use of errors per sentence as a measure of comparative performance is not very satisfactory because of the variability of sentence length across speakers and over time (for the same speaker). However, there is no natural unit in discourse for making such comparisons. Since the sentence has been adopted here as the basis for error determination, errors per sentence is presented as, hopefully, a meaningful approximation.

[2]Overgeneralization, false concept hypothesized, and ignorance of rule restriction are some of the error types used by Richards (1973) in his analysis of English.

[3]Yuen Ren Chao (1968) has listed seven uses of 'le'.

REFERENCES

CHAO, Yuen Ren. 1968. A grammar of spoken Chinese. Berkeley, CA: University of California Press.

KENNEDY, Graeme D. 1973. Conditions for language learning. In J. Oller and J. Richards, eds.: Focus on the learner, pp. 66-80. Rowley, MA: Newbury House Publishers.

NEWMARK, Leonard and David A. Reibel. 1968. Necessity and sufficiency in Language learning. International Review of Applied Linguistics 6.145-164.

RICHARDS, Jack C. 1973. A noncontrastive approach to error analysis. In J. Oller and J. Richards, eds.: Focus on the learner, pp. 96-113. Rowley, MA: Newbury House Publishers.

_____. 1973. Error analysis and second language strategies. In J. Oller and J. Richards, eds.: Focus on the learner, pp. 114-135. Rowley, MA: Newbury House Publishers.

SELINKER, Larry. 1972. Interlanguage. International Review of Applied Linguistics 10.219-231.

TEWKSBURY, M. Gardner. 1948. Speak Chinese. New Haven, CT: Yale University Press.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

ORIGIN OF THE HIGH RISING CHANGED TONE IN CANTONESE*

Maurice K.S. Wong

Tone change in standard Cantonese, unlike tone sandhi, is not conditioned by the tonal environment, and the occurrence of the high rising changed tone appears to be synchronically unpredictable. Due to the close parallel between retroflex suffixation in Mandarin and tone change in Cantonese, it has been proposed that the Cantonese changed tone historically derived from [ji55] 儿 -suffixation, comparable to the development of ér 儿 -suffixation in Mandarin. This paper supports such a hypothesis and develops it further to include both [ji55]- and [tsi35]子 -suffixation as related origins of the high rising changed tone. Two phonological changes are postulated. First, the high tone of the suffixes conditioned any non-high tone of the suffixed morphemes to become high rising. Secondly, the suffixes were deleted. Comparative evidence from both Cantonese and non-Cantonese dialects is presented to show similar processes of phonological change, and the tonal assimilation hypothesis is justified by evidence internal to stardard Cantonese.

In standard Cantonese, there is a large number of morphemes, the vast majority of which are nouns, that have a variant high rising tone, which is traditionally called a "changed tone."[1] For some of these morphemes, the change is obligatory when they constitute the second syllables of bisyllabic words, for example:[2]

(1)	(a)	[p'ou33]	'store'	vs.	[kam55 p'ou35]	'jewelry store'
	(b)	[mun21]	'door'	vs.	[waŋ21 mun35]	'side-door'
	(c)	[jau23]	'friend'	vs.	[sy55 jau35]	'classmate'
	(d)	[wa22]	'saying'	vs.	[siu33 wa35]	'joke'
	(e)	[ts'a:t3]	'to brush'	vs.	[ŋa21 ts'a:t35]	'tooth-brush'
	(f)	[hap2]	'box'	vs.	[mUk2 hap35]	'wooden box'

For other morphemes, the tone change is governed by stylistic factors--the changed tone occurs more frequently in casual styles than in formal styles (Wong 1977), as in the following:

(2)	(a)	[nœy23 sai33]	~ [nœy23 sai35]	'son-in-law'
	(b)	[kam55 nin21]	~ [kam55 nin35]	'this year'
	(c)	[jɛ22 ma:n23]	~ [jɛ22 ma:n35]	'night'
	(d)	[tsi35 mui22]	~ [tsi35 mui35]	'sisters'
	(e)	[siu55 ŋa:p3]	~ [siu55 ŋa:p35]	'roast duck'
	(f)	[ts'a:k2]	~ [ts'a:k35]	'thief'

As Yuán (1960:193) has observed, the changed tone occurs most frequently on the second syllables of disyllabic words. However, tone change on the second syllable is not conditioned by the first, which may be in any one of the nine or ten tones, for example:

(3)(a) [hap2] 'box'
(b) [mUk2 hap35] 'wooden box'
(c) [t'i:t3 hap35] 'iron box'
(d) [ka:u55 hap35] 'plastic box'
(e) [tsi35 hap35] 'paper box'
(f) [mUk2 hap35 ts'Uŋ23] 'the wooden box is heavy'
(g) [tsi35 hap35 hɛŋ55] 'the paper box is light'

As examples (3)(f) and (g) show, the tone change is not conditioned by what follows either. Morphemes in any tone can follow the morpheme [hap35] in (3) without causing any tonal changes to this morpheme. Furthermore, morphemes that are subject to tone change may originally have any one of six tones--33:, 3:, 21:, 23:, 22:, 2:, as can be seen in (1) and (2). Underlying high level (or high falling) tone cannot have a high rising variant, for example:

(4)(a) [sy55]~[sy53] 'book' (*[sy35])
(b) [ŋUk5] 'house' (*[nUk35])

As for the underlying high rising tone, we may consider it to have the same tonal value as the high rising changed tone, and no alternation needs to be accounted for. Thus, grouping 55: (and 53:), 5: and 35: together as high tones, we may make the generalization that only non-high tones can have the high rising variant.

Other than the distinction between high and non-high tones, however, this tone change phenomenon does not appear to be phonologically conditioned, as we have seen in (3). This is different from tone sandhi, which is phonologically conditioned, as shown in (5) below.

(5)(a) [kou53] 'high' + [sa:n53] 'mountain' --> [kou55 sa:n53]
(b) [tUŋ53] 'east' + [pak5] 'north' --> [tUŋ55 pak5] 'northeast'

The tone sandhi rule in Cantonese may be stated as follows:

(6) A high falling tone becomes level if it precedes a high level or high falling tone.[3]

Unlike tone sandhi, tone change is not phonologically predictable, and thus Hashimoto (1972: 95) suggests that morphemes which are subject to tone change have to be marked in the lexicon.

Another crucial difference between tone sandhi and tone change lies in the fact that tone change causes a slight change in the meaning of the affected morpheme, while the tone sandhi is strictly a phonological phenomenon involving no semantic change. Chao (1947: 34-36) characterizes this meaning as "that familiar thing (or person, less frequently action) one often speaks of," which is a "convenient summary of a variety of similar meanings." These meanings, Chao points out, are similar to those of the retroflex suffix in Mandarin, and later he observes that in a large number of cases, the Cantonese changed tone and the Mandarin retroflex suffix apply to the same root morphemes (1959: 46). He therefore suggests treating the changed tone as having a morphemic status, as a suffix with similar function to that of the Mandarin retroflex suffix.

Whitaker (1956: 194-197) further develops this idea of parallelism between the Cantonese changed tone and the Mandarin retroflex suffix and hypothesizes that the former originated from the suffix [ji55] 儿. In the following we will first firmly establish the parallel between the changed tone and the retroflex suffix, and then examine the evidence Whitaker has presented, provide further evidence from other dialects, and look into internal justification for such a hypothesis. We will also expand the hypothesis to include the suffix [tsi35] 子 as a related origin of the high rising changed tone.

1. The present-day form of the retroflex suffix in Mandarin is the result of ér-huà, or "er-ization," a development from ér-suffixation, for example:

(7)(a) huā ér > huār 'flower'
(b) pán ér > pár 'pan'

The loss of syllabicity of the suffix ér as a phonological process involves several rules, which are treated in detail by F.C. Cheng (1973: 24-35). As an illustration, example (7)(a) involves Cheng's rule (34): "The syllable boundary and both the vowel and the tone of the suffix are deleted. The retroflex liquid becomes part of the suffixed syllable." (7)(b) involves also his rule (43): "The front ending of a retroflex-suffixed final is deleted."

The suffix ér has been generally regarded as a diminutive suffix, as the morpheme ér by itself means 'son, offspring.' However, its main function is simply to mark a form as a noun, and meanings of ér-suffixation are many. Besides indicating smallness, it can indicate also "lightness of tone or style," e.g. guān 'an official' vs. guār 'an official (who cares?),' "extensions of meaning," e.g. tiān 'sky' vs. tiār 'weather,' among others (Chao 1968: 230). In a detailed discussion of the retroflex suffixed forms, Chao distinguishes between fourteen structural types (Ibid.: 231-237), of which at least eleven have close parallels in Cantonese using the changed tone forms. The following is a list of these eleven types as described by Chao, and under each type I have included one Cantonese example to show the close parallel.

(8)(a) bound morpheme + ér --> noun
e.g. dié 蝶 vs. hódiér 蝴蝶儿 'butterfly'
cf. [tip2] 蝶 vs. [wu21 tip35] 蝴蝶

(b) noun + ér --> noun
e.g. pán 盘 ~ pár 盘儿 'pan'
cf. [p'un21] 盘 ~ [p'un35] 盘

(c) verb + ér --> noun
e.g. guà 褂 'to hang' vs. guàr 褂儿 '(unlined) coat'
cf. [kwa33] 褂 vs. [kwa33] ~ [k'wa35] 褂

(d) adjective + ér --> noun
e.g. huáng 黄 'yellow' vs. huár 黄儿 'yolk'
cf. [wɔŋ21] 黄 vs. [wɔŋ35] 黄

(e) adjective + X + ér --> noun
e.g. yuàn 院 'yard' vs. hòu yuàr 后院儿 'backyard'
cf. [iyn21] 院 vs. [hau22 jvn35] 后院

(f) noun + X + ér --> noun
e.g. jìng 镜 'mirror' vs. yǎnjiér 眼镜儿 'eye-glasses'
cf. [kɛŋ33] 镜 vs. [ŋa:n23 kɛŋ35] 眼镜

(g) verb + X + ér --> noun
(h) verb + X + ér --> verb + object
e.g. zá 杂 'sundry' vs. dǎzár 打杂儿 'to do sundry things; one who does sundry things'
cf. [tsap2] 杂 vs. [ta35 tsap35] 打杂

(i) X + ér + Y --> noun
e.g. hóu 猴 'monkey' jīn 筋 'muscle' hóujīn 猴儿筋 'rubber band'
cf. [fɔŋ21] 房 'room' [mun21] 门 'door' [fɔŋ35 mun21] 房门 'door of a room'

(j) yi + X + ér
e.g. yīhuì 一会 ～ yīhuìr 一会儿 'a while'
cf. [jat5 tsan22]～ [jat5 tsan35] 一阵 'a while'

(k) XX + ér
e.g. màn 慢 'slow' vs. mànmārde 慢慢儿的 'slowly'
cf. [ma:n22] 慢 vs. [ma:n22 ma:n35] 慢慢

As we can see, with the exception of two types, (8)(i) and (j), not only the changed tone forms have the same structural types as the retroflex suffixed forms, the same morphemes may be treated as suffixed forms in Mandarin and changed tone forms in Cantonese. Furthermore, type (8)(i), which is rare in Mandarin, is also rare in Cantonese, as few disyllabic words have a changed tone on the first syllable (Yuan 1960: 192). The examples under type (k) are not strictly parallel in that the reduplication process in Mandarin is syntactic whereas in Cantonese it is lexical--that is, only a limited number of adjectives can be reduplicated to form adverbs in Cantonese. The existence of these many parallels suggests that the two phenomena are either genetically related or are results of dialect convergence. This paper will not attempt to argue for one alternative over the other. However, we will discuss in a later section what bearings our analysis has on this question.

2. In present-day standard Cantonese, there are only two words in which the suffix [ji55] occurs:

(9)(a) [ma:u55 ji55] 'kitten' ([ma:u55] 'cat')
(b) [hat5 ji55] 'beggar' ([hat5] 'to beg')

This is a peculiar fact in view of the wide-spread ér-suffixation in Mandarin. However, Whitaker (1956: 195) reports the observation that in Guìpíng, Guǎngxī province, in the 1940's, the suffix [ji55] was used after all sorts of nouns. Furthermore, a high falling tone in the Guìpíng dialect

becomes high level if the [ji55] suffix follows. This is, of course, a case of tone sandhi similar to that occurs in stardard Cantonese for speakers that do distinguish between high level and high falling tones. Unfortunately no example is given by Whitaker.

If we suppose that [ji55]-suffixation was a wide-spread phenomenon at an earlier stage of Cantonese, and that the two [ji55]-suffixed words in present-day standard Cantonese are remnants of this phenomenon, we can hypothesize a development parallel to ér-huà in Mandarin. That is to say, in both cases the suffix elided with the root morpheme; whereas in Mandarin the retroflex ending of the suffix remained, in Cantonese the tone of the suffix remained, being assimilated into the root morpheme. The changes in Cantonese occurred in two stages. First, the tone of the root morpheme changed, conditioned by the tone of the suffix. Secondly, the suffix was deleted, resulting in the changed tone form. The dialect of Guìpíng is at the stage before tone change occurred.

2.1. In support of this hypothesis, Whitaker (1956: 196-197) presents evidence from two Cantonese subdialects of Bóbái in Guǎngxī province,[5] which exhibit both the pre-tone change stage and the post-suffix deletion stage. In the "old" dialect of Bóbái, dìlǎo huà, there is a diminutive suffix /ɲ/, pronounced [ɲin^{11}], with a "long rising tone." (Note that the superscript '11' here is the tone category, i.e. the eleventh tone in this dialect, and not the phonetic value of the tone, which is not given by Whitaker. The same notation will be used in the following Bóbái examples.)

(10)(a)	[kae$^{5}_{6}$]	'chicken'	[kae$^{5}_{6}$ɲin$^{11}_{11}$]	'chick'
(b)	[iaŋ$^{9}_{9}$]	'sheep'	[iaŋ$^{9}_{9}$ɲin$^{11}_{11}$]	'little sheep'
(c)	[ts'ak$^{9}_{9}$]	'thief'	[ts'ak$^{9}_{9}$ɲin$^{11}_{11}$]	'little thief'

In the "new" dialect, xīnmín huà, the diminutive suffix is missing, but the diminutive form of many nouns, and a few verbs, is changed to take on the eleventh tone, the "long rising tone":

(11)(a)	[meo$^{1}_{2}$]	'cat'	[meo$^{11}_{11}$]	'kitten'
(b)	[ɲao$^{2}_{2}$]	'cow, ox'	[ɲao$^{11}_{11}$]	'calf'
(c)	[kao$^{3}_{3}$]	'dog'	[kao$^{11}_{11}$]	'puppy'
(d)	[t'ɐe$^{4}_{4}$]	'brother'	[t'ɐe$^{11}_{11}$]	'little brother'
(e)	[oŋ$^{5}_{5}$]	'jar'	[oŋ$^{11}_{11}$]	'little jar'
(f)	[mui$^{6}_{6}$]	'sister'	[mui$^{11}_{11}$]	'little sister'

For words in the Entering tones, i.e. those ending in -p, -t, or -k, the consonantal endings are assimilated into homorganic nasals, which is additional evidence for the previous existence of the suffix [ɲin^{11}] in this dialect, for example:

(12)(a)	[œk$^{7}_{8}$]	'house'	[oŋ$^{11}_{8}$]	'small house'
(b)	[hak$^{8}_{8}$]	'to frighten'	[hak$^{11}_{11}$haŋ$^{11}_{6}$]	'to frighten a little'
(c)	[hɔp$^{8}_{10}$]	'box'	[ham$^{11}_{11}$]	'small box'
(d)	[mat$^{8}_{10}$]	'thing'	[man$^{11}_{11}$]	'small thing'

2.2. Lǐ (1957: 137-142), in a brief survey of diminutive suffixation

in Chinese dialects, presents some data that suggest similar phonological changes. In Píngyáng, Zhèjiāng province, the diminutive morpheme is pronounced [ŋ21] in isolation, and it may be suffixed to a noun as a separate syllable pronounced in a low rising tone, for example:

(13)(a) [tœ44] 'knife' [tœ44 ŋ13] '(little) knife'
(b) [bi35] 'blanket' [bi35 ŋ13] '(little) blanket'

A second way of suffixation involves addition of the velar nasal ending to the root morpheme, lengthening of its vowel, and modification of its tone, for example:

(14)(a) [tœ44] 'knife' [tœ:ŋ24] '(little) knife'
(b) [lɔ21] 'basket' [lɔ:ŋ13] '(little) basket'
(c) [li53] 'plum' [li:ŋ21] '(little) plum'

Since no description of tone sandhi or tone change in this dialect is available, we cannot account for the different tone shapes of the suffixed forms. However, on this basis of these data we assume some type of tonal assimilation between the root morpheme and the suffix. In particular, the co-existence of alternate suffixed forms such as those in (13)(a) and (14)(a) suggests that the Píngyáng dialect is at a transitional stage from the suffixed form to the changed tone form.

2.3. Other dialects discussed by LǏ show different phonological manifestations of diminutive suffixation. At one extreme we have the dialect of Hángzhōu, Zhèjiāng province, in which the diminutive suffix always occurs as a separate syllable, pronounced [l̩213] (a syllabic [l] with tone 213), causing no change at all to the root morpheme, for example (LǏ 1957: 139):

(15)(a) [təŋ44 l̩213] '(little) chair'
(b) [dʑi213 l̩213] '(little) egg-plant'

At the other extreme we have the Yìwū dialect in Zhèjiāng province, in which the diminutive morpheme is pronounced [n̩11] in isolation, but the suffix always occurs as a consonantal ending attached to the root morpheme, for example:

(16)(a) [sɯɤ42] 'little'
(b) [tɕi33] 'chicken' [sɯɤ42 tɕi:n33] 'chick'
(c) [mo35] 'hat' [sɯɤ42 mo:n35] 'little hat'

Like the Píngyáng dialect, the suffixation here also involves loss of syllabicity of the suffix and lengthening of the root vowel. Unlike the Píngyáng dialect, however, the tone of the suffix is simply deleted. The tone deletion is the same as that in the Mandarin case.

2.4. From the preceding discussion of several dialects we can see the tendency for the diminutive suffix to be elided with the root morpheme, and that Mandarin is not alone in this development. In some cases only the consonantal ending of the suffix remains, as in Mandarin and the Yìwū dialect; in other cases both its consonantal ending and its tone remain, as

in the Píngyáng dialect and the xīnmín huà of Bóbái. In the Cantonese case, the suffix does not have a consonantal ending. Only the tone remains and is assimilated into the root morpheme. Internal justification for this tonal assimilation can be found within standard Cantonese, which we will discuss below.

3. There are many occurrences of the high rising changed tone that do not appear to be related to [ji55]-suffixation, or at least there is no synchronic evidence that suggests such relationship. Some of these occurrences may be used as internal evidence for our hypothesis.

3.1. Many verbs in standard Cantonese can be reduplicated to indicate that the action is done only once or for a short while, or simply to convey a sense of casualness, for example:

(17)(a)	[si33]	'to try'	[si35 si33]	'to try (once)'
(b)	[ha:ŋ21]	'to walk'	[ha:ŋ35 ha:ŋ21]	'to take a walk'
(c)	[ŋa:u23]	'to bite'	[ŋa:u35 ŋa:u23]	'to take a bite'
(d)	[man22]	'to ask'	[man35 man22]	'to ask (casually)'
(e)	[ha:k3]	'to frighten'	[ha:k35 ha:k3]	'to frighten (once)'
(f)	[tUk2]	'to read'	[tUk35 tUk2]	'to read casually'

In careful or delibrate speech, (17)(a-f) may be uttered as (18)(a-f) respectively.

(18)(a) [si33 jat5 si33]
(b) [ha:ŋ21 jat5 ha:ŋ21]
(c) [ŋa:u23 jat5 ŋa:u23]
(d) [man22 jat5 man22]
(e) [ha:k3 jat5 ha:k3]
(f) [tUk2 jat5 tUk2]

Thus synchronically we can consider the form with the morpheme [jat5], 'one,' as the underlying form, which undergoes rules (19)(a) and (b), in that order, in the morphologically defined environment of reduplication.

(19)(a) $\begin{Bmatrix} 33:/3: \\ 21: \\ 23: \\ 22:/2: \end{Bmatrix}$ => 35: / __ [jat5]

(b) [jat5] => Ø

Note here that the high tones do not undergo rule (19)(a), for example:

(20)(a) [t'ɛŋ55 jat5 t'ɛŋ55] ~ [t'ɛŋ55 t'ɛŋ55] 'listen (casually)'
(b) [sIk5 jat5 sIk5] ~ [sIk5 sIk5] 'turn off (for a short while)'
(c) [t'ai35 jat5 t'ai35] ~ [t'ai35 t'ai35] 'take a look'

By grouping together 55: (and 53:), 5: and 35: as high tones and the other six tones as non-high tones, the changes involved in rules (19)(a) and (b) can be stated in a more general way:

(21) In casual speech, the following two ordered rules apply:
(a) In reduplication, a non-high tone of the reduplicated morpheme preceding [jat5] becomes a high rising tone.
(b) [jat5] is deleted.

Similar alternation occurs in the reduplication of classifiers and adjectives, for example:

(22)(a) [jat5 kɔ33 jat5 kɔ33] ~ [jat5 kɔ35 kɔ33] 'one by one'
(b) [jat5 tip2 jat5 tip2] ~ [jat5 tip35 tip2] 'plate by plate'

(23)(a) [hUŋ21 jat5 hUŋ21] ~ [hUŋ35 hUŋ21] 'very red'
(b) [mu:n23 jat5 mu:n23] ~ [mu:n35 mu:n23] 'very full'

Note again that if the reduplicated classifier or adjective is originally in one of the high tones, its original tone is retained, for example:

(24)(a) [jat5 hau35 jat5 hau35] ~ [jat hau35 hau35] 'one by one (referring to cigarettes, etc.)'
(b) [kou55 jat5 kou55] ~ [kou55 kou55] 'very tall'

The same rules in (21) obviously apply here also.

3.2. With this internal evidence we can account for the origin of the high rising changed tone by a change similar to the synchronic rules in (21). That is, a non-high tone of the suffixed morpheme becomes high rising, conditioned by the high tone of the suffix, which is then deleted.

4. Lastly, [tsi35]-suffixation in Cantonese suggests a development similar to [ji55]-suffixation. Whereas zǐ 子 -suffixation in Mandarin is as common a phenomenon as ér-suffixation and serves similar functions, [tsi35]-suffixation in Cantonese, though larger in scope than [ji55]-suffixation, is still limited to a small number of morphemes (Yuán 1960: 209). Interestingly enough, most of the [tsi35]-suffixed morphemes have an alternate form with the high rising changed tone--again, with the exception of those originally in a high tone, for example:

(25)(a) [fa:t3 tsi35] ~ [fa:t35] 'way, method'
(b) [jat2 tsi35] ~ [jat35] '(special) day'
(c) [min22 tsi35] ~ [min35] 'face, honor'
(d) [fa:i33 tsi35] ~ [fa:i35] 'chopsticks'
(e) [si55 tsi35] (*[si35]) 'lion'

We may then expand our hypothesis to include [tsi35]-suffixation as one of two related origins of the changed tone. That is to say, both [ji55] and [tsi35] conditioned tone change in the suffixed morpheme.

4.1. Although comparative evidence in support of [tsi35]-suffixation as an origin of the changed tone is lacking, we do have some internal evidence. The perfective aspect in Cantonese is ordinarily indicated by the verb suffix [tsɔ35], for example:

(26)(a) [kœy23 hœy33 tsɔ35 lak2]
he go V.suff. S.particle 'He has gone.'
(b) [ŋɔ23 sIk2 tsɔ35 lak2]
I eat 'I have eaten.'

For many Cantonese speakers, sentences (26)(a) and (b) may be realized as (26)(c) and (d) respectively, and we may treat the former as underlying forms of the latter.

(26)(c) [kœy23 hœy35 lak2]
(d) [ŋɔ23 sIk35 lak2]

Similarly, the morpheme [hai35], 'at, on, in,' causes a tone change, for example:

(27)(a) [fan33 hai35 ni55 sy33] ~ [fan35 ni55 sy33]
sleep at here 'sleep here'
(b) [ts'ɔ23 hai35 kɔ35 sy33] ~ [ts'ɔ35 kɔ35 sy33]
sit there 'sit there'

A third case of tone change conditioned by a high rising tone morpeme involves again adjective reduplication, but unlike (23), here the adjective is immediately repeated, followed by the morpheme [tei35], for example:

(28)(a) [hUŋ21 hUŋ21 tei35] 'a little red'
(b) [mu:n23 mu:n23 tei35] 'a little full'

In colloquial speech, (28)(a) and (b) are usually realized as (28)(c) and (d) respectively.

(28)(c) [hUŋ21 hUŋ35 tei35]
(d) [mu:n23 mu:n35 tei35]

Once again, in all three cases above, if the morpheme in question has an underlying high tone, no tone change takes place, for example:

(29)(a) [kœy23 t'ai35 tsɔ35 lak2] ~ [kœy23 t'ai35 lak2]
he see 'He has seen (it).'

(b) [p'ou55 hai35 kɔ35 sy33] ~ [p'ou55 kɔ35 sy33]
'spread (it) there'
(c) [pIk5 pIk5 tei35] (*[pIk5 pIk35 tei35]) 'a little crowded'

5. To give a general account of all the synchronic alternations described in sections 3. and 4., we will mark the morphemes [jat5], [tsɔ35], [hai35] and [tei35] as having a feature [+tone change], since only a few high tone morphemes cause tone change. We can then formulate two ordered rules, which apply in casual speech, as follows: (M stands for morpheme, and the subscript 'i' marks identical morphemes.)

(30) $[\text{-high}] \Rightarrow \begin{bmatrix}+\text{high}\\+\text{rising}\end{bmatrix} / (M_i) \left[\underline{\quad}_{M_i}\right] \begin{bmatrix}M\\+\text{high}\\+\text{tone change}\end{bmatrix} (M_i)$

(31) $\begin{bmatrix}M\\+\text{high}\\+\text{tone change}\end{bmatrix} \Rightarrow \emptyset$

(The morpheme [tei35] has to be marked for not undergoing this rule.)

In this analysis, the change involved in rule (30) is a type of tonal assimilation and is phonetically motivated.

5.1. If we examine the well-known tone sandhi rule in Mandarin, we will see that its outcome appears similar to that of rule (30) in Cantonese. The Mandarin tone sandhi rule may be stated as follows (cf. C.C. Cheng 1973: 47):

(32) $214: \Rightarrow 35: / \_\_ [\ \#\ 214:]_1$

Since the third tone, 214:, is a low tone and the other three underlying tones are high tones, rule (32) is a dissimilation rule which changes a sequence LOW-LOW to HIGH-LOW (Ibid.: 53). Thus in Mandarin, a low tone is changed to high, while in Cantonese a non-high tone is changed to high. However, the similarity ends there. Rule (30) is an assimilation rule, and it requires many specific morphological conditions for its application. On the other hand, rule (32) is a dissimilation rule, and it applies whenever phonological conditions are met. The two tone rules are therefore very different in nature, and the similarity between their outcomes does not constitute evidence supporting the changed tone as a result of dialect convergence.

6. With the preceding analysis, we can account for a similar tone change phenomenon that occurs in the Táishān dialect of Guǎngdōng province, which is closely related to standard Cantonese. In this dialect four out of the five basic tones--i.e., except the high level tone, 55:--are susceptible to a tone change that raises the ending of the tone to the highest point, for example (T. Cheng 1973: 281):[7]

(33)(a) [cuŋ33 em55] 'hour' vs. [cuŋ335] 'clock'
(b) [hoŋ22] 'sugar' vs. [hoŋ225] 'candy'
(c) [an32 ko33] 'cake' vs. [an325] 'egg'
(d) [yit55 koy33 ŋut21] 'one month' vs. [ŋut215] 'month'

According to T. Cheng (1973: 278), the tone change here is not phonologically conditioned, but there are morphological and syntactic conditions governing its occurrence. First, the vast majority of the words that bear the changed tones are concrete nouns.[8] Secondly, monosyllabic nouns or the last syllables of compound nouns are more apt to bear the changed tone. Identical observations have been made previously concerning the high rising changed tone in standard Cantonese.

Even though T. Cheng rightly suspects that the Táishān changed tones

have segmental origins, unfortunately she does not investigate the occurrence of diminutive suffixes such as [tu55] 子 . In any case, the following example (Ibid.: 283) suffices as internal evidence for the segmental origin of the changed tones.

(34) [k'ek21 t'u335 o33 mu55 hoy22 niŋ215]
they sit at stage there
'They are sitting over there on the stage.'

In (34), the verb [t'u335] occurs in the changed tone to express "continuous or sustained location," which may be similarly expressed by using the same verb in its basic tone, i.e., 33:, followed by the particle [kin55]. This is, of course, a process of tonal assimilation similar to that in standard Cantonese, particularly concerning the verb suffix [ts>35] (cf. (26)).

We will, therefore, account for the changed tones in both Táishān and standard Cantonese as having common segmental origins, i.e., in the high tone diminutive suffixes. Just like standard Cantonese, the Táishān dialect has gone through first a tonal assimilation, conditioned by the high tone of the diminutive suffixes, which raises the end points of all non-high level tones to become rising tones, and then deletion of the suffixes.

7. In summary, the origin of the high rising changed tone in Cantonese may be accounted for in the following manner:

(35) First stage--Existence of a large class of [ji55] and [tsi35] suffixed morphemes.
Second stage--A non-high tone of a suffixed morpheme became a high rising tone, conditioned by the high tone of the suffixes.
Third stage--Deletion of the suffixes.

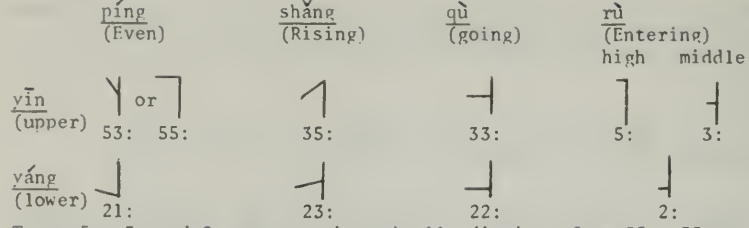
This account is supported by both comparative evidence from Mandarin and several other dialects, and internal evidence within standard Cantonese. It provides us with an explanation for the occurrence of the high rising changed tone, which synchronically appears to be unpredictable.

NOTES

*I would like to thank Professors Chin-chuan Cheng and Hans Hock for their very helpful comments on earlier versions of this paper.

[1]Hashimoto (1972) has a list of about 340 different morphemes that can take on the high rising changed tone. The list is not exhaustive but close to being so.

[2]Cantonese is transcribed in IPA with a tone-letter consisting of one or two numerals following the syllable. The nine (or ten) tones of standard Cantonese are as follows:



Tones 5:, 3: and 2: are not phonemically distinct from 55:, 33: and 22:, respectively, as only syllables ending in -p, -t, or -k may have the Entering tones. This paper refers to 55:/5: as high level, 53: as high falling, 35: as high rising, 33:/3: as mid level, 21: as low falling, 23: as low rising, and 22:/2: as low level.

[3]This tone sandhi rule exists only for speakers who make a consistent distinction between 55: and 53:. In my speech as well as that of many speakers from Hong Kong, however, such distinction is not kept consistently, and more often than not the two are pronouced as the same tone, i.e. 55:.

[4]All Chinese words other than the examples in Cantonese and other dialects are written in pīnyīn Romanization. In the Mandarin examples, a modified version of pīnyīn is used in order to show some of the phonological changes involved. Thus in (6)(b), for example, pár is shown instead of the usual spelling pánr. In addition, the nasalization symbol is used, as in (7)(d).

[5]Whitaker adopted the data on the two Bóbái dialects from Wang (1932).

[6]The reason for the vowel alternations in (12)(a) and (c) is unknown.

[7]The tone-letter notation used in the Táishān examples is that of Chén (1966), except that 21: and 31: are considered to be the same tone, following T. Cheng's analysis.

[8]Chén (1966) has collected about 650 items that are suscentible to tone change, of which seven are pronouns, three are adjectives, two are adverbs, fifty to sixty are verbs, and the rest, about 580 items, are all nouns.

REFERENCES

CHAO, Yuen Ren. 1947. Cantonese primer. Cambridge: Harvard University Press.

CHAO, Yuen Ren. 1959. The morphemic status of certain Chinese tones. Transactions of the International Congress of Orientalists in Japan 4: 44-48.

CHAO, Yuen Ren. 1968. A grammar of spoken Chinese. Berkeley: University of California Press.

CHÉN, Xǐ-wú. 1966. Táishān fāngyán tèshú biàndiào chūtán. Zhōngguó Yǔwén 140: 34-36.

CHENG, Chin-chuan. 1973. A synchronic phonology of Mandarin Chinese. The

Hague: Mouton.
CHENG, Teresa M. 1973. The phonology of Taishan. Journal of Chinese Linguistics 1(2): 256-322.
HASHIMOTO, Oi-kan Yue. 1972. Studies in Yue dialects I: phonology of Cantonese. London: Cambridge University Press.
LǏ, Róng. 1957. Hànyǔ fāngyán diàochá shǒucè. (Manual for the survey of Chinese dialects.) Běijīng: Kēxué Chūbǎnshè.
WANG, Li. 1932. Une prononciation chinoise de Po-pei (Province de Kouang-si) étudiée à l'aide de la phonétique expérimentale. Paris: Ernest Leroux.
WHITAKER, Katherine Po Kan. 1955-56. A study on the modified tones in spoken Cantonese. Asia Major, new ser. 5(1-2): 9-36, 184-201.
WONG, Maurice K.S. 1977. The use of the high rising changed tone in Cantonese: a sociolinguistic study. Studies in the Linguistic Sciences 7(2): 65-81.
YUÁN, Jiā-huá. 1960. Hànyǔ fāngyán gàiyào. (An outline of Chinese dialects.) Běijīng: Wénzì Gǎigé Chūbǎnshè.

Studies in the Linguistic Sciences
Volume 9, Number 1, Spring 1979

ON THE PASSIVE IN THAI

Soranee Wongbiasaj

This paper is a survey of the so-called passive in Thai, that is, the surface structure of NP_1 thùuk (NP_2) VX. The first part of this paper deals with the semantic and/or pragmatic restrictions of the Thai passive. It is argued in the second part that, since thùuk 'to come into contact with, to be affected by' as a simple verb has the same semantic and syntactic restrictions as thùuk, the left-most element of the passive predicate, it is likely that they are the same lexical item. Three analyses of the Thai passive are presented, and the Embedding Analysis is shown to be the most appropriate one since it requires the fewest unnecessary mechanisms and leaves the fewest facts to be further explained.

I.1 The term 'passive' as used in this paper refers to a surface structure like:

(1) $NP_1 \left\{ \begin{matrix} \text{thùuk} \\ \text{doon} \end{matrix} \right\} NP_2$ V X

in which the logical object or other non-object NP which is the patient occurs as the surface subject, as in:

(2) phɔ̂ɔ doon mɛ̂ɛ tɔ̀y 'Father was hit by Mother.'
NP_1 NP_2
father mother hit

(3) dɛɛŋ thùuk tii 'Daeng was beaten.'
NP_1 beat

NP_1 is the patient in each such sentence; NP_2, where it is found, is the agent, e.g., of the verb tɔ̀y 'hit' in (2); in (3) the agent of tii 'beat' is unspecified. There are two more elements involved in this construction: thùuk and doon. Both, as independent verbs and in their use in passive construction, mean 'to touch, to come into contact with, to be affected by'. In this paper, I give examples only of thùuk since what applies to thùuk applies to doon also. (4) and (5) are examples of thùuk used as an independent verb.

(4) phǒm thùuk lûukbɔn thîi hŭa
I ball at head
'A ball hit me on my head.
(lit. I came into contact with a ball on my head.)'

(5) phǒm thùuk akàat nǎaw mâydây
I weather cold cannot
'I can't be exposed to the cold weather.'

Notice that here the use of thùuk requires one to suppose that the

experience or the effect was bad or unpleasant. Even though this assumption need not always be present for thùuk as a main verb, it is there often enough to make its presence in the passive construction fairly unproblematical; for the Thai passive generally has 'adversative' connotations. In other words, the adverse connotations of thùuk are carried over to its use in the passive to show that the patient is affected by, suffers, undergoes, or experiences something unpleasant. With such a connotation, the passive construction is controlled by some semantic and/or pragmatic restrictions, allowing only sentences with an unpleasant association in connection with the patient to be 'passivized'. This is why (6) and (7) are acceptable but (8) and (9) are not, in a normal situation.

(6) dèk thùuk rót chon 'The kid was hit by a car.'
kid car hit

(7) mǎa thùuk tèʔ 'The dog was kicked.'
dog kick

(8) *phǒm thùuk hây ŋən 'I was given money.'
give money

(9) *chán thùuk yím hây 'I was given a smile.'[1]
I smile give

I.2 Another point worth mentioning is that thùuk, both in the passive and in the active, has the same meaning and unpleasant association and also has at least one syntactic constraint. That is, the agent and the patient in a sentence with thùuk cannot be coreferential. This constraint rules out (10) and (11), which involves reflexives. (For more discussion on Reflexives in Thai, see Surintramont, 1978)

(10)*dɛɛŋ$_i$ thùuk tuaeeŋ$_i$ 'Daeng touches himself.'
self

(11)*dɛɛŋ$_i$ thùuk tuaeeŋ$_i$ dàamêɛ 'Daeng was subject to self's insulting
self insult his mother.'

This supports the idea that thùuk in both the passive and as a simple main verb is fundamentally the same lexical item. The only possible difference is that thùuk as a simple main verb has a more 'concrete' meaning of 'touching' than it has in the passive.

II. In this section, I deal with the underlying structure of the passive. So far, three analyses have been proposed: the Transformational Analysis, the Underlying Auxiliary Analysis, and the Embedding Analysis. I evaluate these three alternatives by showing what additional mechanisms might be needed for each one, and argue that it is the last analysis that is the most appropriate.

II.1 The Transformational Analysis

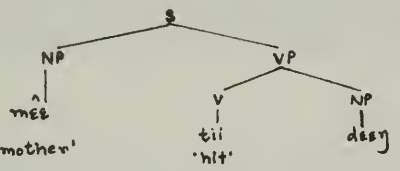
This analysis was first proposed by Chaiyaratana (1961) for pedagogical purposes. In proposing it, she adopted the Chomskian 'standard' analysis of the English passive. She postulated the base structure

like (13) for passive sentences like (12.a) and (12.b).

(12.a) dɛɛŋ thùuk mɛ̂ɛ tii 'Daeng was hit by mother.'
mother hit

(12.b) dɛɛŋ thùuk tii 'Daeng was hit.'

(13)



In this analysis, the active and the passive have the same underlying structure, and there is a transformation (or transformations) called Passive, to move the object to the front and add thùuk after it. Another rule that applies here is Agent Deletion, so that (12.b) can also be generated.

This analysis is weakly compatible with a native speaker's intuitions in as much as we feel that a passive sentence is related in some way to the active counterpart in having the same propositional content/truth value. However, this analysis is deficient in many other respects.

First, on the assumption that the deep structure is determined by the meanings, it is more reasonable to posit two separate underlying structures, one for the active and the other for the passive, since the full meaning of the latter, in particular the presupposition associated with it, distinguishes it from the former, as mentioned in the previous section. However, this problem might be easily handled by having a trigger like [+PASSIVE] in the base structure of the passive. Then, the base structure of the two constructions would be at least marginally different. Nonetheless, it should be noted that this is an ad hoc device, since the trigger [+PASSIVE] has no explanatory value.

Second, it is not clear if Passive is just one rule or a set of rules, in this analysis. Nor is it obvious how it operates. In a generalized surface structure for the passive, as in:

(14) X NP_1 thùuk Y NP_2 V Z
patient agent

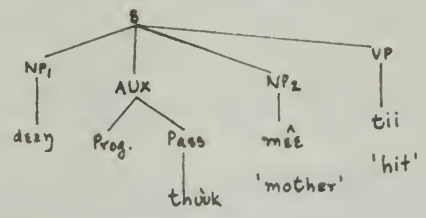
suppose NP_2 remains a subject, syntactically, and V continues to function as an independent verb (of a clause, at least), syntactically. In this case, thùuk must be 'transformationally introduced' as a non-independent verb. Notice that in doing this, we cannot account for the fact mentioned in the previous section, that the thùuk in the active and that in the passive have the same semantic and syntactic restrictions. Moreover, how thùuk is 'transformationally introduced' and under what node it should be put is unclear. Thùuk is not in any sense in a position where we might claim that it is part of AUXILIARY (NP_2 precludes this) and, thus, would require us to postulate, ad hoc, a new empty base node. Besides, the occurrence of the NP_1 to the left of thùuk causes another problem.

Assuming that Passive is a copying rule[2], this NP_1 is copied from the object of the verb by the very transformational process or processes that also supposedly 'introduces' thùuk. This assumption is ruled out, because we would then be appealing to some unknown principle, in order to decide whether NP_1 is copied left of thùuk, or thùuk is copied right of the NP_1, or both are introduced simultaneously. This means that neither thùuk nor the left-copied patient NP has any obvious base-generated structural nodes that we can assign them to by any 'passive transformation(s)'. To sum up, this analysis, which follows Chomsky's 'standard' analysis of the English passive, is not descriptively adequate.

II.2 The Underlying Auxiliary Analysis

This analysis was put forward by Warutamasintop (1975) at the Eighth International Conference on Sino-Tibetan Languages and Linguistics. The underlying structure of the passive that he proposed for (12) is:

(15)



Now the passive has an underlying structure of its own, distinct from that of the active, with thùuk as an auxiliary verb. The only rule applying here is Agent Deletion, which is optional, deleting NP_2. No question concerning the semantic difference between the passive and the active need arise, because the passive has not been derived from the active. Still, there are some deficiencies in this analysis.

First, we can never tell what the grammatical relation of the NP_2 is in the P-marker of (15). Another problem follows, namely, how to write the phrase structure rule for this underlying structure. Should it be S→NP AUX NP VP? That would be strange because Thai is a SVO language, and there is no other instance of structure with a NP between an AUX and a VP in this language.

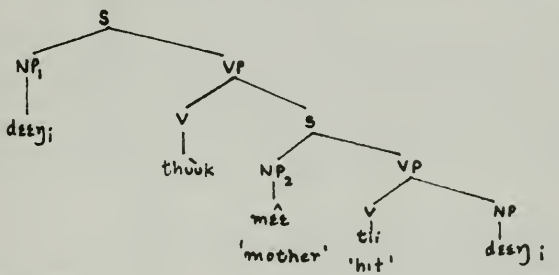
Second, the main problem with this analysis is its essential vacuity. This analysis has been proposed so as not to let one crucial problem arise--the problem which seems to arise with the Embedding Analysis, namely, that thùuk as a main verb of the passive does not seem to select sentence modifiers or auxiliaries. Instead of solving this problem, this analysis chooses to dispose of it by the essentially ad hoc means of using AUX as a residual category. But, first, we know how problematical AUX is in general theory. Second, AUX, if it means anything as a base category, exists to deal with some definite and limited kinds of things like tense, mood, and aspect. But thùuk is none of these. Moreover, in putting it under AUX, the fact that thùuk in the active and in the passive have the same meaning and restrictions has been missed.

From all these deficiencies, and because of all the arbitrary unexplainable base nodes and the grammatical category that would be needed in this analysis, I have to conclude that it is also descriptively inadequate.

II.3 The Embedding Analysis

This analysis, which I believe to be the appropriate one, has been proposed by Warotamasikkhadit (1963), Needleman (1973) and Filbeck (1973). The underlying structure for (12) is supposed by them to be:

(16)



This time, every element is assigned a non-arbitrary grammatical relation, so the problem of unusual phrase structure rules does not occur. In this case, the passive does not have the same base structure with the active, but the relationship between these two constructions still holds; for the active sentence is contained as a proper part in the passive's underlying structure.

The main point in this analysis is that thùuk is treated as the main verb in the base structure[3], not just as either an auxiliary as in the Auxiliary Analysis, or as 'transformationally introduced'. In doing so, the fact that the thùuk in the passive and that in the active share some semantic and syntactic restrictions has been nicely accounted for.

However, there is one crucial problem in this analysis, which makes Warutamasintop (1975) favor the Auxiliary Analysis over the Embedding Analysis. This has to do with the interaction of thùuk and its modifiers such as manner adverbs and the progressive auxiliary (kamlaŋ). He presents the problem with the following examples (his numberings in brackets).

(17) [12]a. kháw kamlaŋ thùuk náŋsŭuphim wícaan
he prog. newspaper criticize
'He is being criticized by the newspaper.'

b. náŋsŭuphim kamlaŋ wícaan kháw
'The newspaper is criticizing him.'

(18) [13]a.*hen kamlaŋ thùuk kɛ̂ɛw bàat mɯɯ
prog. glass cut hand
'Heng is having his hand cut by a piece of glass.'

b.*kɛ̂ɛw kamlaŋ bàat mɯɯ heŋ
'A piece of glass is cutting Heng's hand.'

Kamlaŋ has usually been treated as a progressive auxiliary, meaning 'be in the course of, in the process of'. It is, therefore, used only with verbs representing 'durative' or 'iterative' actions (i.e., actions that can be done repeatedly or extends over time). Naturally, verbs like bàat 'to (accidentally) cut', or hòklóm 'to (accidentally) fall down', which represent neither durative nor repeated actions, will not fit with kamlaŋ. This mismatching results in an ungrammatical sentence in (18.b). It is, however, the ungrammaticality of (18.a) that creates a problem. Warutamasintop (1975) accounts for the ungrammaticality of (18.a) in the same way as (18.b) by treating it as due to the mismatching of kamlaŋ and bàat. Obviously, there is nothing wrong with the matching of kamlaŋ and thùuk, since (17.a) is all right. If this is the case, it means kamlaŋ is the auxiliary (or the modifier, in a sense) of bàat, and not of thùuk. This is why, in his analysis, he treats the verb following thùuk as the main verb, and as for thùuk itself, the only category left for it is the AUXILIARY. As has been shown in the preceding section, such a treatment of thùuk does not account for the facts and, even worse, it results in some unexplainable phenomena (a unique phrase structure rule, for instance), which led us to reject the Auxiliary Analysis. (18.a) seems to constitute a crucial problem for the Embedding Analysis also. Thùuk is treated as a main verb in this analysis, with bàat as the embedded verb. Generally, we would expect the main verb to interact with the auxiliary. In this case, if it is true that kamlaŋ interacts with only the embedded verb and never with thùuk, the status of thùuk as the main verb as well as the whole analysis itself should be suspect.

However, a reasonable semantic account can be given in this case. First, we have to understand the interaction of thùuk and its embedded verb in the passive construction. Thùuk directly interacts with the embedded verb in the sense that the patient of the action (i.e., the object of the embedded verb) is the same person as the 'sufferer' (i.e., the subject of thùuk), and the 'suffering' experience is directly from the action (represented by the embedded verb) itself, not from the result of the action. In other words, the 'suffering' and the action causing it are simultaneous; the length of time of the suffering equals the length of time of the action. Then, if the action is not durative, (as in the case of bàat, for instance), the act of suffering from the very action can hardly be durative, either. Therefore, in (18.a), thùuk is also a non-durative verb. Consequently, it is wrong to say that the mismatching of kamlaŋ and bàat renders (18.a) ungrammatical, or that thùuk does not interact with the auxiliary. The mismatching in (18.a) might be between thùuk and kamlaŋ, or it might even be between the durativity of kamlaŋ and the non-durativity of thùuk and bàat together, as these two verbs have a very close semantic interaction in this sentence. In that case, thùuk, the main verb in this analysis does interact with the auxiliary.

We are faced with the same type of problem when we consider the way thùuk seems to interact with certain adverbial expressions.

(19) [14]a. kháw thùuk rót chon yàaŋrɛɛŋ
he car hit seriously
'He was seriously hit by a car.'

b. rót chon khǎw yàaŋrɛ̀ɛŋ
'The car seriously hit him.'

(20) [15]a.*khǎw thùùk rót chon yàaŋchaliǎwchalàat
wisely
'He was wisely hit by a car.'

b.*rót chon khǎw yàaŋ chaliǎwchalàat
'The car wisely hit him.'

Warutamasintop (1975) argues that the ungrammaticality of (20.b.) is due to the mismatching of chon 'hit' and yàaŋchaliǎwchalàat 'wisely'. He claims further that (20.a) is bad for the same reason. He, then, concludes that in this case, chon interacts with the manner adverb in such a way that it selects the adverb. Chon, therefore, has the characteristic of a main verb, whereas thùùk does not. If he were correct, this, again, would render the Embedding Analysis suspect.

However, I don't think his argument is valid, since if it is the case that (20.b) is rejected because of the mismatching of chon and yàaŋchaliǎw-chalàat, it still does not follow that (20.a) is bad for the same reason. Moreover, consider,

(21) *khǎw thùùk lûukbɔn thîi hŭa yàanchaliǎwchalàat
ball at head wisely
'*A ball wisely hit him on his head.
(lit. He wisely came into contact with a ball on his head.)'

(21) is bad also because of the mismatching of thùùk and yàaŋchaliǎwchalàat. Therefore, if the ungrammaticality of (20.b) could lead to the conclusion that (20.a) is bad because of the mismatching of chon and the manner adverb, it should logically be equally possible to say, based on the ungrammaticality of (21), that (20.a) is ungrammatical because of the mismatching of thùùk and the manner adverb. That is, it could be argued that thùùk interacts with the adverb the same way chon does.

Nevertheless, I think the ungrammaticality of (20.a) can be accounted for better on semantic grounds. Thùùk and its embedded verb have a direct semantic interaction such that the patient of the action and the 'sufferer' are the same person. Whatever is done to the object of the embedded verb affects the subject of thùùk directly. The degree of suffering as well as the manner in which the subject suffers should, therefore, be proportional to the degree of the action being done or the manner in which it is done. Because of this direct interaction of these two verbs, it is difficult to tell if the adverb is selected by, or selected to fit, the one or the other of the two verbs, or by both. Nonetheless, even though we cannot say with certainty that thùùk does select an adverb by itself, it is false to conclude that it definitely does not.

To conclude, the seemingly crucial problem having to do with the selection and the interaction of thùùk with respect to the progressive and adverbials in the Embedding Analysis can be plausibly accounted for and need not, therefore, be the basis of a counter-argument to this analysis.

If this analysis is correct, then there is no such rule as Passive in Thai. The only possible rules or processes involved here are Pronominalization, Identity Deletion and/or Agent Deletion. I shall not go into any detail as to how Pronominalization and/or Identity Deletion might apply[4], but no matter how they apply, the same surface structure results: (23.a&b) from (22).

(22) dɛɛŋ$_i$ thùuk mɛ̂ɛ tii dɛɛŋ$_i$

(23.a) ?dɛɛŋ$_i$ thùuk mɛ̂ɛ tii kháw$_i$[5]

(b) dɛɛŋ thùuk mɛ̂ɛ tii
'Daeng was beaten by Mother.'

Notice that Pronominalization and/or Deletion are not restricted to the passive only; they also apply in other constructions.

(24.a) dɛɛŋ$_i$ hây phǒm chûay dɛɛŋ$_i$
have/let I help

(b) dɛɛŋ$_i$ hây phǒm chûay kháw$_i$

(c) dɛɛŋ hây phǒm chûay
'Daeng had/let me help him.'

(25.a) dɛɛŋ$_i$ khít wâa phǒm ca chûay dɛɛŋ$_i$
think say will

(b) dɛɛŋ$_i$ khít wâa phǒm ca chûay kháw$_i$

(c) dɛɛŋ khít wâa phǒm ca chûay
'Daeng thought that I would help him.'

(24.a) and (25.a) are underlying structures to which Pronominalization and/or Deletion apply, yielding (24.b&c) and (25.b&c), respectively. Another rule involved here is Unspecified Agent Deletion. This rule has been claimed to delete an unspecified agent or subject. (cf. Surintramont, 1978). At this point, after Unspecified Agent Deletion applies, we get: NP$_i$ thùuk V.

Consequently, if this analysis is accepted as the most appropriate, only two things are needed. First, we need the rules mentioned above, which also operate in other constructions. Second, we need a non-coreferential agent-patient constraint, which is also required in the active construction, with thùuk as the main verb, and also in other languages, English and Japanese, for instance, to rule out (26) and (27), respectively. ((26) and (27) have been taken from McCawley (1972)).

(26) *Fred$_i$ had his father insulted by him$_i$

(27) *Mitiko wa zibunni titi o buzyoku s-rare-ta
self-by father insult passive-past
'Mitiko$_i$ was subjected to self$_i$ insulting her father.'

All these considerations, taken together with the fact that we would need to bring into grammar some ad hoc or unexplainable process or processes as well as some ad hoc devices if we were to adopt the Transformational Analysis or the Auxiliary Analysis, tip the balance in favor of the Embedding Analysis. This is because the last mentioned analysis requires the fewest, if any, unnecessary or ad hoc assumptions, mechanisms and things to be further explained. Therefore, I suggest that this analysis is the most appropriate of all so far proposed, and, thus should be selected.

III. In conclusion, I have shown in this paper, first, the semantic restriction on thuùk in the passive, and, then, that this restriction, as well as some other syntactic restrictions are shared by thuùk in both the passive and the active constructions. I have concluded in the first section that they are actually the same lexical item. In the second section, I have shown the three analyses that have so far been proposed for the underlying structure of the Thai passive, together with the problems and the deficiencies each analysis has. I have also argued that the crucial problem the Embedding Analysis seems to face can be overcome on semantic grounds. This, together with the fact that the Embedding Analysis requires us to add to the grammar the fewest unnecessary assumptions and mechanisms, has led me to conclude that it is the best analysis of the three.

NOTES

[1]However, although (8) and (9) are rejected under normal circumstances, it is possible to find a context or interpretation making them acceptable. For instance, if the speaker is being sarcastic, even (8.a) and (9.a) can be perfectly acceptable.

(8.a) yêɛɛ caŋ phǒm thuùk hâay ŋən ìlklɛ́ɛw
terrible I give money again
'This is terrible; I have been given money again.'

(9.a) suay chamát chán thuùk taakhonnán yím hâay
unlucky very I jerk that smile give
'How unlucky: I've geen given a smile by that jerk.'

Therefore, the acceptability of these sentences depends on the speaker's view and presupposition of the action represented by the verb or the verb phrase following thuùk. If the verb phrase hâay ŋən 'give money' and yím hâay 'give a smile' are considered unpleasant or undesirable under a certain circumstance, they match the inherent adversative semantic feature of thuùk, resulting in an acceptable sentence. Under normal situation, the two parts mismatch, resulting ina semantic anomaly.

[2]This assumption is based on a passive sentence in which the patient is retained in the form of a pronoun, such as (1) and (2).

(1) ?dɛɛŋ$_i$ thuùk mêɛ tii khǎw$_i$
mother hit him
'Daeng was hit by Mother.'

(2) dɛɛŋ$_i$ thùuk tamrùat yót wíttayú càak khǎw$_i$
police confiscate radio from
'Daeng had the police confiscate a radio from him.'

[3]This analysis is superficially similar to Hasegawa's analysis for the English and Japanese passive (Hasegawa (1968)). The main distinction between these two analyses is that thùuk, the main verb in this analysis, is different in its implication from the copula be, which is the main verb in Hasegawa's analysis. Thùuk in this analysis is semantically and syntactically related to thùuk in the active whereas be is not related to be in other contexts.

[4]For more detail on the application of Pronominalization, Deletion and Agent Deletion, see Surintramont (1978).

[5](23.a) is acceptable only to some of my informants, but not to all of them. It seems as though for those who do not get it, Deletion obligatorily applies here. (cf, examples in footnote 2.)

REFERENCES

CHAIYARATANA, Chalao. 1961. A comparative study of English and Thai syntax. Ph.D. Dissertation, Indiana University.

CHOMSKY, N. 1965. Aspects of the theory of syntax. Cambridge, Mass:MIT Press.

FILBECK, D. 1973. The passive in Thai. Anthropological Linguistics 15:1, p.32-41.

HASEGAWA, K. 1968. The passive construction in English. Language 44:2, p. 230-243.

LEKAWATANA, Pongsri. 1970. Verb phrases in Thai: a study in deep-case relationships. Ph.D. Dissertation, The University of Michigan at Ann Arbor.

McCAWLEY, N. 1972. A study of Japanese reflexivization. Ph.D. Dissertation, The University of Illinois at Urbana-Champaign.

NEEDLEMAN, R. 1973. Tai verbal structures and some implications for current linguistics theory. Ph.D. Dissertation, UCLA.

SURINTRAMONT, Aporn. 1978. Some deletion phenomena in Thai. Ph.D. Dissertation, The University of Illinois at Urbana-Champaign.

WAROTAMASIKKHADIT, Udom. 1963. Thai syntax : an outline. Ph.D. Dissertation, The University of Texas at Austin.

WARUTAMASINTOP, Worawut. 1975. Handouts for the eighth international conference on Sino-Tibetan language and linguistics.

Forthcoming Special Issues

Fall 1979	Vol. 9, No. 2, *Relational Grammar and Semantics* Editor: Jerry L. Morgan	$5.00
Fall 1980	Vol. 10, No. 2, *Papers on Diachronic Syntax* Editor: Hans Henrich Hock	$5.00
Fall 1981	Vol. 11, No. 2, *Studies in Language Variation: Nonwestern Case Studies* Editor: Braj B. Kachru	$5.00
Fall 1982	Vol. 12, No. 2, *South Asian Linguistics: Syntax and Semantics* Editor: Yamuna Kachru	$5.00

STUDIES IN THE LINGUISTIC SCIENCES

The following issues of SLS are out of print:
Spring 1971, Vol. 1, No. 1, *Papers in General Linguistics;* Fall 1971, Vol. 1, No. 2, *Papers on Hindi Syntax,* Editor: Yamuna Kachru; Spring 1972, Vol. 2, No. 1, *Papers on Syntax and Semantics,* Editor: Georgia M. Green; Fall 1972, Vol. 2, No. 2, *Studies in Baltic Linguistics,* Editors: Hans H. Hock and Michael J. Kenstowicz; Spring 1973, Vol. 3, No. 1, *Papers in General Linguistics;* Fall 1973, Vol. 3, No. 2, *Papers on South Asian Linguistics,* Editor: Braj B. Kachru; and Spring 1976, Vol. 6, No. 1, *Papers in General Linguistics,* Special section: *Topics in relational grammar,* Editor: Jerry L. Morgan.

The following issues are available:

Spring 1974	Vol. 4, No. 1, *Papers in General Linguistics*	$3.50
Fall 1974	Vol. 4, No. 2, *Papers on Phonetics and Phonology* Editors: Charles W. Kisseberth and Chin-W. Kim	$3.50
Spring 1975	Vol. 5, No. 1, *Papers in General Linguistics*	$3.50
Fall 1975	Vol. 2, No. 2, *Papers on Historical Linguistics: Theory and Method* Editors: Ladislav Zgusta and Hans H. Hock	$3.50
Fall 1976	Vol. 6, No. 2, *Papers on African Linguistics* Editors: Eyamba G. Bokamba and Charles W. Kisseberth	$3.50
Spring 1977	Vol. 7, No. 1, *Papers in General Linguistics*	$3.50
Fall 1977	Vol. 7, No. 2, *Studies in East Asian Linguistics* Editors: Chin-chuan Cheng and Chin-W. Kim	$3.50
Spring 1978	Vol. 8, No. 1, *Papers in General Linguistics*	$5.00
Fall 1978	Vol. 8, No. 2, *Linguistics in the Seventies: Directions and Prosjects* Editor: Braj B. Kachru	$10.00
Spring 1979	Vol. 9, No. 1, *Papers in General Linguistics*	$5.00

Orders should be sent to:
SLS Subscriptions, Department of Linguistics
4088 Foreign Languages Building
University of Illinois
Urbana, Illinois 61801

ies in
The Linguistic Sciences

. 9, No. 2
all 1979

RELATIONAL GRAMMAR AND SEMANTICS

Department of Linguistics
University of Illinois

STUDIES IN THE LINGUISTIC SCIENCES

PUBLICATION OF THE DEPARTMENT OF LINGUISTICS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

AIM: *SLS* is intended as a forum for the presentation of the latest original research by the faculty and especially students of the Department of Linguistics, University of Illinois, Urbana-Champaign. Especially invited papers by scholars not associated with the University of Illinois will also be included.

SPECIAL ISSUES: Since its inception *SLS* has been devoting one issue each year to restricted, specialized topics. A complete list of such special issues is given on the back cover. The following special issues are under preparation: *Studies in Arabic Linguistics,* edited by Michael J. Kenstowicz; *Studies in Language Variation: Nonwestern Case Studies,* edited by Braj B. Kachru; *Papers on Diachronic Syntax,* edited by Hans Henrich Hock; *South Asian Linguistics: Syntax and Semantics,* edited by Yamuna Kachru.

BOOKS FOR REVIEW: Review copies of books (in duplicate) may be sent to the Review Editors, Studies in the Linguistic Sciences, Department of Linguistics, University of Illinois, Urbana, Illinois, 61801.

SUBSCRIPTION: There will be two issues during the academic year. Requests for subscriptions should be addressed to *SLS* Subscriptions, Department of Linguistics, 4088 Foreign Languages Building, University of Illinois, Urbana, Illinois, 61801.

Price: $5.00 (per issue)

TABLE OF CONTENTS

STUDIES IN THE LINGUISTIC SCIENCES

RELATIONAL GRAMMAR AND SEMANTICS

Edited by
Jerry L. Morgan

VOLUME 9, NUMBER 2
FALL, 1979

DEPARTMENT OF LINGUISTICS, UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS 61801

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

INVERSIONS AS GRAMMATICAL RELATION CHANGING RULES IN BANTU LANGUAGES*

Eyamba G. Bokamba

It has generally been agreed in transformational grammar that verbal agreement (VA) is a relatively simple cyclic rule which is triggered by either logical or cyclically derived subject NPs.

This conclusion is challenged here on the basis of data from three Bantu languages: Swahili, Lingala, and Dzamba. It's demonstrated here, through the examination of simple and complex sentences involving inversions, that (1) VA is a much more complex rule than it has hitherto been assumed; (2) that VA is a non-cyclic rule; and (3) that inversions are grammatical relation changing rules in these languages. With regard to point (2), the paper shows that VA is a post-cyclic rule, because it applies after topicalization and relativization in two of the languages under consideration here. The paper concludes with a brief discussion of the theoretical implications of these facts, and with some speculations on the occurrence of similar data in other languages in the world.

1.0 BACKGROUND

1.1 Introduction. Subject-verb agreement (VA) is perhaps the most universal characteristic of human languages; yet, there has been very little attention given to it in the generative transformational literature. As a result, many of its formal properties continue to be misunderstood. The few studies that exist on the subject, however, suggest that VA is a relatively simple cyclic rule which is triggered by either logical or cyclically derived subject NPs (Chomsky 1965; Gregersen 1967; Givón 1972a; Vanek 1977).

These conclusions, which appear to have been based largely on analyses of simple sentences, have been questioned in at least two recent studies (Morgan 1972; Lawler 1977). Morgan shows on the basis of English data that VA is a complex transformation whose structural description requires varying semantic specifications, and whose mode of application is anything but cyclic. Specifically, Morgan (1972) argues that there are three critical problems that must be dealt with in any analysis of VA: (1) the problem of ascertaining the level at which VA applies; (2) the problem of selecting which NP triggers VA; and (3) the problem of determining which properties of the selected NP will control VA. Morgan's contention is essentially that when these problems are dealt with adequately, many of the assumptions associated with the standard and relational grammar analyses of VA will have to be abandoned. Lawler (1977) seems to have taken up this challenge in his study of VA in Achenese (an Indone-

sian language) where he attempts to show in effect that this transformation is always triggered by the logical subject NP regardless of whether or not it has been demoted. Lawler's data, if correct, would contradict the relational grammar hypothesis that only terms can trigger VA (Perlmutter and Postal 1974).[1]

This paper is a further attempt to characterize VA in natural languages. It examines data involving the interaction of VA and certain inversion phenomena, i.e., passivization, topicalization, and relativization, in three Bantu languages: Swahili, Lingala, and Dzamba.[2] The paper considers the three questions raised by Morgan (1972) in view of the data presented here, and concludes that VA is a complex non-cyclic rule, at least in these Bantu languages. This conclusion leads to some speculations on the properties of VA in other languages, and assesses the theoretical implications of the data discussed. The analysis begins with a sketch of some of the basic syntactic characteristics of simplexes in Bantu languages, with particular emphasis on Swahili, Lingala, and Dzamba.

1.2 Word Order in Bantu. The common word order in a simple sentence in Bantu languages has been assumed to be Subject-Verb-Object (SVO). This can be seen in the following sentences:

(1) Dzamba (Dz.)

a. ómw-âna a-tom-aki mw-énzi. (SVO)
the-child Ag-send-ed a message
(The child sent a message.)

b. *ómw-âna mw-énzi a-tom-aki. (SOV)
the-child a message he-sent

c. *a-tom-aki ómw-âna mw-enzi. (VSO)
he-sent the-child a message

(2) Lingala (Li.)

a. mw-ǎná á-tínd-áki ma-loba. (SVO)
child Ag-send-ed words
(The child sent a message.)

b. *mw-ǎná ma-loba á-tínd-áki. (SOV)
child words he-sent

c. *á-tínd-áki mw-ǎná ma-loba. (VSO)
he-sent child words

(3) Swahili (Sw.)

a. m-toto a-li-peleka ma-neno. (SVO)
child Ag-Pst-send words
(The child sent a message.)

b. *m-toto ma-neno a-li-peleka. (SOV)
child words Ag-pst-send

c. *a-li-peleka m-toto ma-neno. (VSO)
Ag-pst-send child words

If a sentence contains both a direct and an indirect object in these languages, the latter generally precedes the former in a neutral (i.e., non-emphatic) statement. A change in the ordering of these constituents leads to a change in focus and/or meaning, as evidenced in part in the (b) versus the (a) sentences:

(4) Li. a. mw-ǎná á-pés-ákí mbwá biléi. (SVIoDo)
child he-give-ed dog food
(The child gave the dog (some) food.)

b. mw-ǎná á-pés-ákí biléi mbwa. (SVDoIo)
(The child gave food, rather than something else, to the dog.)

c. mw-ǎná á-pés-ákí bilei na mbwa. (SVDoIo)
(The child gave the food to the dog.)

Sw. a. m-toto a-li-m-pa mbwa cha-kula. (SVIoDo)
(The child gave the dog some food.)

b. m-toto a-li-pa cha-kula mbwa. (SVDoIo)
(The child gave food, rather than something else, to the dog.)

The structure exemplified in the Lingala and Swahili sentences(4b) and (5b), respectively, is not possible in many other Bantu languages. What one generally finds in such languages when the direct object precedes the indirect object is a structure like (4c) in which a preposition intervenes between the two objects. Kikongo and Shona fall into this category, while Dzamba and Kinyarwanda constitute a third category; that is, one which disallows both (4b) and (4c).

1.3 Cliticization. What the facts in (4) and (5) seem to suggest is that the SVIoDo order is the unmarked word order for constructions involving two objects. This observation, however, holds only for sentences in which both object NPs are full nouns; if one of them is an anaphoric pronoun, there is no apparent syntactic or semantic difference in many of the languages where such constructions are possible. This is particularly true of central Bantu languages (e.g., Dzamba, Likila, Lonkundo, Kikongo, and Tshiluba), as illustrated by the Dzamba and Lingala sentences (6) and (7), respectively:

(6) Dz. a. ómw-âna á-ézá-ákí é-mva bieka. (SVIoDo)
(The child gave the dog some food.)

b. ómw-âna a-yé-ézá-ákí bieka.
the-child he-it-gave food
(The child gave it some food.)

c. ómw-âna a-bí-ézá-ákí é-mva.
the-child he-them-gave the-dog
(The child gave it (i.e., food) to the dog.)

d. *ómw-âna a-bí-ézá-áki ná e-mva.
the-child he-them-gave to the-dog

(7) Li. a. mw-ǎná a-é-pés-ákí biléi.
child he-it-gave food
(The child gave it (i.e., the dog) some food.)

b. mw-ǎná a-bí-pés-ákí mbwá.
(The child gave it (food) to the dog.)

c. *mw-ǎná a-bí-pés-ákí na mbwá.

Sentences (6d) and (7c) are ungrammatical, because the occurrence of the prepositions in constructions like these is not permissible. These facts seem to suggest that the grammar treats clitics as part of the morphology of the verb, rather than as reordered constituents, for otherwise we would expect them to obey the same constraints as nouns. Support for this hypothesis comes from facts like the following where independent pronouns are subject to the same constraints as full nouns in those languages that permit such constructions:

(8) Dz. a. ómw-âna a-ézá-ákí ba:-butú í-bieka.
the-child he-gave the-guests the-food
(The child gave the guests the food.)

b. ómw-âna a-ézá-ákí bá:-bee í-bye.
the-child he-gave def-them def-it
(The child gave it (the food) to them.)

c. *ómw-âna a-ézá-áki í-bye bá:-bee.

(9) Li. a. mw-ǎná a-pés-ákí ba-paya bi-léi.
child he-gave guests food
(The child gave the guests the/some food.)

b. mw-ǎná a-pés-áki bangó byango.
them it (food)
(The child gave it to them.)

c. *?mw-ǎná a-pés-áki byango (ná) bangó.
he-gave it (food) (to) them

Swahili permits only sentences in which the indirect object is a pronoun:

(10) a. m-toto a-li-wa-pa wa-geni chakula
child he-ed-them-give guests food
(The child gave the guests some food.)

b. m-toto a-li-wa-pa wao chakula.
(The child gave them some food.)

c. *m-toto a-li-wa-pa wageni cho
he-gave-them guests it (food)

In most Bantu languages, including the three under consideration here, the preferred strategy for the construction exemplified in (8b) and (9b) is to cliticize one of the pronouns into the verb. In such cases the ordering of the two objects is unconstrained, i.e. either object can precede the other as in (6) and (7) above.

Two other elements that need to be mentioned here are adjectives and adverbs. All adjectives (i.e., descriptive, demonstrative, quantifier, possessive) in Bantu languages generally follow the noun that they modify, as illustrated in (11) through (12):

(11) Li. a. mw-ǎná óyo mu-néné á-bét-áki mo-paya wa ngai.
child this Ag-big he-hit-ed guest Poss Me/mine
(The big child hit my guest.)

b. bǎ-ná ba-ye ba-néné bá-balé ba-bét-áki mo-paya wa ngai
children these Ag-big Ag-two they-hit-ed guest Poss me/mine
(These two big children hit my guest.)

(12) Sw. a. m-toto huyu mkubwa a-li-piga mgeni wa-ngu.
child this Ag-big he-ed-hit guest Poss-mine
(This big child hit my guest.)

b. wa-toto ha-wa wa- kubwa wa-wili wa-li-piga mgeni wa-ngu.
children these Ag-big Ag- two they-ed-hit guest Poss-mine
(These two big children hit my guest.)

Whenever a sentence contains an adverb, it generally occurs at the end of the sentence in non-emphatic cases:

(13) Li. a. mw-ǎná óyo mu-néné á-bét-áki mo-paya wa ngai leló.
(This big child hit my guest today.)

b. mw-ǎná óyo mu-néné á-bét-áki mo-paya wa ngai ná mw-étế.
(This big child hit my guest with a stick.)

In emphatic cases, depending on the language, the adverb (especially time) may occur either sentence-initially or anywhere before the verb (see Bokamba 1976b, 1976c).

2.0 GRMMATICAL AGREEMENT IN BANTU

2.1 Adjectival and Verbal Agreement in the Simplex. Grammatical agreement is one of the most pervasive characteristics of Bantu languages. It is traditional in Bantu linguistics to distiguish two types of agreement patterns: (1) nominal or adjectival agreement, and (2) verbal agreement. Although this paper will not deal with adjectival agreement per se, it will be instructive to briefly examine this type of pattern in the simple sentence for comparative purposes.

Adjectival agreement in most Bantu languages is largely based on the morphology of the noun, whereas verbal agreement is not. In particular, nouns in Bantu languages are divided morphologically into noun classes in terms of singular/plural pairing of the noun prefixes and in terms of the distinct pattern of VA they exhibit. About 23 noun classes have been reconstructed for the entire group, but in actual fact no Bantu language studied so far has all these classes.[3] There is a great deal of variation in this respect throughout the Bantu area, with a number of these languages having on the average between thirteen to sixteen noun classes. The languages under consideration here fall within this range: Dzamba and Lingala have each twelve noun classes, and Swahili has sixteen[4] (Bokamba 1976b; Ashton 1946)

In all three languages adjectival agreement is characterizable as a morphological copying phenomenon that copies the prefix of the modified noun onto the variable adjective, as in (14) and (15):

(14)	Lingala. a.	mw-ǎná mu-nene (cl. 1)	a big child
	b.	bǎ-ná ba-nene (cl. 2)	big children
	c.	mu-nkandá mu-nene (cl. 3)	a big/large book
	d.	mi-nkandá mi-nene (cl. 4)	big/large books
	e.	li-toko li-nene (cl.5)	a large mat
	f.	ma-toko ma-nene (cl. 6)	large mats
	g.	e-langá e-nene (cl. 7)	a large garden
	h.	bi-langá bi-nene (cl. 8)	large gardens
	i.	n-dáko e-nene (cl. 9)	a big house
	j.	n-dáko i-nene (cl. 10)	big houses
	k.	bo-lingo bo-nene (cl. 14)	great love

(15)	Swahili. a.	m-toto m-refu (cl. 1)	a tall child
	b.	wa-toto wa-refu (cl. 2)	tall children
	c.	m-fereji m-refu (cl. 3)	a long ditch
	d.	mi-fereji mi-refu (cl. 4)	long ditches
	e.	jembe refu (cl. 5)	a long hoe
	f.	ma-jembe ma-refu (cl. 6)	long hoes
	g.	ki-su ki-refu (cl. 7)	a long knife
	h.	vi-su vi-refu (cl. 8)	long knives
	i.	n-yumba n-defu (cl. 9/10)	(a) tall house(s)
	j.	u-bao u-refu (cl. 11)	a long board/plank
	k.	ku-andika ku-zuri (cl.12)	good (hand) writing
	l.	ma-hali ma-zuri (cl. 16)	a good/nice place

The adjectival agreement prefixes in Dzamba are almost identical to those of Lingala (14). In all three languages this type of agreement is obligatory whenever the adjective is variable.

Verbal agreement, in contrast, involves more complex features and subcategorization of the subject noun. Each finite verb in Bantu languages obligatorily agrees with its subject in person and class number by coping the relevant semantic and morphological specifications of that noun. The contrast betwen adjectival and VA is exemplified in the following Swahili sentences:

(16) a. m-toto m-refu a-me-anguka.
Ag-tall Ag-Perf-fall
(The tall child fell/has fallen.)
b. wa-toto wa-refu wa-anguka.
(The tall children fell/have fallen.)
c. m-nazi m-refu u-me-anguka.
(The tall coconut tree fell/has fallen.)
d. mi-nazi mi-refu i-me-anguka.
(The tall coconut trees fell/have fallen.)
e. jembe refu li-me-anguka.
(The long hoe fell/has fallen.)
f. ma-jembe ma-refu ya-me-anguka.
(The long hoes fell/have fallen.)
g. ki-su ki-refu ki-me-anguka.
(The long knife fell/has fallen.)
h. vi-su vi-refu vi-me-anguka.
(The long knives fell/have fallen.)
i. nyumba n-defu u-me-anguka.
(The tall house fell/has fallen.)
j. nyumba n-defu m-bili zi-me-anguka.
(The two tall houses fell/have fallen.)

Notice here that while the adjectival agreement markers can in almost all cases be traced morphologically to the noun prefix in each sentence, the VA prefixes cannot, except for classes 2 and (7/8) which are illustrated in (16b) and (16g,h), respectively.

The pattern of VA exhibited in (16) is further complicated by the subcategorization of the Swahili nouns into animate vs. inanimate. Nouns falling into the former category, regardless of their morphological noun class, will take the same agreement prefixes as human nouns, as in (17); whereas those falling in the latter group will take the agreement prefixes that are appropriate to their classes, as in (16c-j):

(17) a. ki-jana m-refu a-me-anguka.
youth Ag-tall Ag-Perf-fall
(The tall youngman fell/has fallen.)
b. vi-jana wa-refu wa-me-anguka.
(The tall youngmen fell/have fallen.)
c. ki-boko m-kubwa a-me-anguka.
hippo. Ag-big Ag-Perf-fall
(The big hippopotamus fell/has fallen.)
d. ki-boko wa-kubwa wa-wili wa-me-anguka.
(The two big hippopotamuses fell/have fallen.)
e. mbwa m-kubwa a-me-anguka.
(The big dog fell/has fallen.)
f. mbwa wa-kubwa wa-wili wa-me-anguka.
(The two big dogs fell/have fallen.)

The expected adjectival and VA patterns for these nouns would be as in (18), but as evidenced here, these sentences are ungrammatical; they would be acceptable only if the subject were considered to be toys.[5]

(18) a. *ki-jana ki-refu ki-me-anguka.
b. *vi-jana vi-refu vi-me-anguka.
c. *ki-boko ki-kubwa ki-me-anguka.
d. *mbwa m-kubwa u-me-anguka.
e. *mbwa m-kubwa m-bili zi-me-anguka.

This type of agreement pattern is not unique to Swahili: it occurs in many Bantu languages which, for convenience, may be termed the Swahili-type.

Until the data in (17) and (18) were presented, it appeared that the only relevant features that need to be specified in the adjectival and VA rules are number, person, and class membership. But as attested in (17) and (18), however, these specifications are not sufficient by themselves: the feature [animacy] is crucial in the determination of the appropriate agreement forms. These data lend support to Morgan's (1972) argument that it is not sufficient to determine which NP triggers VA: one must also ascertain which feature(s) of the selected NP control(s) that agreement.

Diverging from the Swahili-type languages are the Lingala or Dzamba-type which exhibit a largely alliterative VA pattern. This is illustrated by the Lingala Sentences below:

(19) a. mw-ǎná mu-néné á-kwéy-áki.
child Ag-big Ag-fall-ed
(A/The big child fell.)
b. bǎ-ná ba-néné ba-kwéy-áki.
(The big children fell.)
c. mu-nkandá mu-néné mu-kwéy-áki.
(The big/large book fell.)
d. mi-nkandá mi-néné mi-kwéy-áki.
(The big/large books fell.)
e. li-toko li-néné li-kwéy-áki.
(The large mat fell.)
f. ma-toko ma-néné ma-kwéy-áki.
(The large mats fell.)
g. e-langá e-néné e-zík-áki.
(The big farm burned.)
h. bi-langá bi-néné bi-zík-áki.
(The large farms burned.)
i. bo-lingo bo-néné bo-béb-í.
(The great love/romance is wrecked.)

Dzamba and other related languages exhibit the same agreement pattern illustrated here, and do not subcategorize nouns into animate/inanimate as the Swahili-type languages do.[6]

These two agreement patterns largely characterize the type of VA found in the simple sentences in most Bantu languages when the subject noun is third person singular or plural. When it is first or second person singular or plural, the VA prefixes typically expected in each language type are those given in (20) for the Swahili-type, and in (21) for the Dzamba/Lingala type:

(20) Sw. a. (mimi) ni-li-kwenda nyumba-ni.
I Ag-Pst-go home-loc
(I went home.)
b. (wewe) u-li-kwenda nyumba-ni.
(you (sg.) went home.)
c. yeye) a-li-kwenda nyumba-ni.
(He/She went home.)
d. (sisi) tu-li-kwenda nyumba-ni.
(We went home.)
e. (nyinyi) m-li-kwenda nyumba-ni.
(You (pl.) went home.)
f. (wao) wa-li-kwenda nyumba-ni.
(They went home.)

(21) Dz. a. (ó-ngá) ná-zong-aki o lómbo loome.
I Ag-return-ed to home today
(I returned home today.)
b. (ó-kao) o-zong-aki o lómbo loome.
(You (sg.) returned home today.)
c. (ó-kei) a-zong-aki o lómbo loome.
(He/She returned home today.)
d. (ba-bánga) to-zong-aki o lómbo loome.
(We returned home today.)
e. (bá-benyi) o-zong-aki o lómbo loome.
(You (pl.) returned home today.)
f. (bá-bee) ba-zong-aki o lómbo loome.
(They returned home today.)

What these facts, along with those in (14) through (18), show is that for each person and number there is a specific agreement or subject prefix. In some languages the prefix may be zero for some of the cases (e.g., third person human in Chimwi:ni) or identical for two of the independent subject pronouns in the conjugation paradigm (e.g., 2nd person singular and plural, as in Dzamba sentences 21b,e; or 3rd person singular and plural, as in Makua). The over-all system, however, provides VA contrasts that permit unambiguous reference to the person, number, and noun class of the subject noun. It is for this reason that the occurrence of the independent subject pronouns in sentences like(20) and (21) is optional; they can be omitted freely (after the application of VA) without affecting the grammaticality of the sentence. Insofar as the question of the selection of the NP which triggers VA and that of the semantic features which control it are concerned, it appears from the data presented thus far that the logical NP and the features person, number, animacy, and noun class control VA in these languages.

2.2 Inversions and Verbal Agreement. It is largely facts such as those presented above that have often led to the conclusion that VA in Bantu languages is defined on underlying subjects and that it operates in a left-to-right manner (Gregersen 1967; Givón 1972).[7] As implied earlier, however, this position cannot be maintained in light of data from sentences involving inversion phenomena to which we now

turn. We will show in this part of the paper that neither the standard theory or the relational grammar analysis of VA will account for all the facts in inverted constructions.

2.2.1 Passive and Verbal Agreement. Consider in this regard, first, the passive construction. This rule, as in many other languages, involves inversion: the rule applies to active sentences such as those underlying the (a) and (c) below by promoting the logical object to the subject position and demoting the logical subject to an object position, marking it with the preposition na, as in (b) and (d):

(22) Sw. a. m-toto a-li-vunja ki-ti.
child Ag-Pst-break chair
(The child broke the chair.)
b. ki-ti ki-li-vunj-w-a na m-toto.
chair Ag-Pst-break-Pass by child
(The chair was broken by the child.)
c. m-toto a-li-vunja vi-ti.
(The child broke the chairs.)
d. vi-ti vi-li-vunj-w-a na m-toto.
(The chairs were broken by the child.)
e. *ki-ti a-li-vunj-w-a na m-toto.
f. *vi-ti a-li-vunj-w-a na m-toto.

(23) Li. a. ba-páyá ba-sómb-ákí li-toko leló.
guests Ag-buy-ed mat today
(The guests bought a mat today.)
b. li-toko li-sómb-ám-ákí ná ba-paya leló.
mat Ag-buy-Pass-ed by guests today
(The mat was bought by the guests today.)
c. ba-paya ba-sómb-ákí ma-toko leló.
(The guests bought the mats today.)
d. ma-toko ma-sómb-ám-ákí ná ba-paya leló.
(The mats were bought by the guests today.)
e. *li-toko ba-sómb-ám-áki ná ba-paya leló.
f. *ma-toko ba-sómb-ám-áki ná ba-paya leló.

(24) Dz. a. ó-mw-âzi a-kpét-ékí í-mw-eté waâbo.
the-woman Ag-cut-ed the-tree here
(The woman chopped down the tree here.)
b. i-mw-eté mu-kpét-ém-ékí n'ó-mw-âzi waâbo.
the-tree Ag-cut-Pass-ed by-the-woman here
(The tree was chopped down by the woman here.)
c. ó-mw-âzi a-kpét-ékí í-nzeté waâbo.
(The woman chopped down the trees here.)
d. í-nzeté i-kpét-ém-ékí n'ó-mw-âzi waâbo.
(The trees were chopped down by the woman here.)
e. *í-mw-eté a-kpét-ém-ékí n'ó-mw-âzi waâbo.
f. *í-nzeté a-kpét-ém-éki n'ó-mw-âzi waâbo.

In addition to the inversion, several other properties exemplified

here need to be highlighted. First, it should be noted here that unlike in Achenese, VA in Bantu passives is triggered by the derived subject NP, as illustrated in the (b) and (d) sentences above. Second, the grammaticality of sentences like (e) and (f) demonstrates that passive precedes VA. Given that VA in Bantu languages characteristically defines subjects, the conclusion to be drawn from these facts is that passive is a grammatical relation changing rule in these languages. This conclusion is consistent with the theory of relational grammar. Third, in each language there is a specific morpheme for marking the passive verbs, and these (morphemes) can only be interpreted as such. In the above sentences these markers are: -w- for Swahili, -am-/-em- for Lingala and Dzamba. Finally, the agent is preceded by the preposition na in all three languages.

2.2.2 Topicalization and Verbal Agreement. Common passives in Bantu languages do not present any problem for either the standard theory or the relational grammar analysis of VA,[8] but this does not hold for topicalized constructions in the Dzamba-type languages. To see this, consider, first, the Dzamba sentences in (25):

(25) a. óPetélo a-kpét-él-éki bâzi nz-eté wâàbo.
spc-Peter ag-cut-App-ed women trees here
(Peter chopped down (some) trees here for the women.)
b. bá-bâzi ba-kpét-él-éki óPetélo nz-eté wâàbo.
(The women chopped down (some) trees here for Peter.)
(For the women, Peter chopped down some trees here.)
c. bá-bâzi ngó ba-kpét-él-éki óPetélo nz-eté wâàbo.
(As for the women, they cut (some) trees here for Peter.)
((As) For the women, Peter cut (some) trees here.)
d. í-nz-eté i-kpét-él-éki óPetélo bâzi wâàbo.
(The trees, Peter cut for some women here.)
e. í-nz-eté ngó i-kpét-él-éki óPetélo bâzi wâàbo.
((As for) The trees, Peter cut for some women here.)
f. *ba-bâzi (ngó) óPetélo a-kpét-él-éki nz-eté wâàbo.
g. *í-nz-eté (ngó) óPetélo a-kpét-él-éki bâzi wâàbo.

These constructions are paralleled in Lingala, Likila, and several other Bantu zone C languages. As discussed in detail in Bokamba (1976a,b), these sentences occur as responses to follow-up questions in which the speaker inquires about two or more objects but the respondent answers the question only to one of the objects.

What is particularly interesting about these sentences is that they involve inversion and changes in grammatical relations, as exemplified by the VA pattern in (25b-e). Specifically, given the structure underlying sentence (25a), topicalization in Dzamba and related languages may be viewed as involving the promotion of an object to a subject position and the demotion of a subject to a position immediately after the verb, as in (25b-e). This rule can promote any object NP and prepositional phrases, including instrumentals and locatives; and may be formulated to optionally insert the topic-comment

marker ngo in Dzamba and nga in Lingala and Likila. After the application of this rule, VA will apply between the verb and its derived subject. The inversion is obligatory, as attested in part by the ill-formedness of (25f,g); and the order of application stated here appears to be the only principled and simplest alternative to account for the facts under consideration. It should be pointed out here, however, that the interaction of these rules sometimes leads to ambiguities just in case the topicalized NP is animate and capable of performing the action of the verb. Sentences (25b-c) are such cases.

The reader may recall at this point that the inversion just described is similar to that exhibited in the formation of passives, and may be wondering if topicaization and passivization in the Dzamba-type languages are not in fact related. The resemblance is actually superficial, because the two rules differ in significant respects syntactically and semantically. For instance, while passive introduces a na-phrase and a passive morphology, topicalization simply inserts a ngó/ngá-phrase without affecting the verb morphology. There is, for instance, no passive morphology in the sentence in (25), nor is there a possible passive reading from any of these sentences. Admittedly, the two rules have the same effect on VA, but this is also a superficial resemblance, as will be shown shortly.

Topicalized constructions such as those in (25) do not present any problem to the relational grammar analysis of VA insofar as the prediction of the correct agreement forms is concerned, but they raise serious questions regarding the assumption, espoused by both this and the standard theory, that VA is a cyclic rule.[9] Given this assumption and the generally accepted analysis of topicalization as involving copying, Chomsky-adjunction, and deletion, the derivation we expect from an underlying structure like (25a) would be (27) for sentence (25):[10]

(26) a. (oPetelo -kpet-el-eki bazi nz-ete waabo)

(27) a. (oPetelo a-kpet-el-eki bazi nz-ete waabo.
b. S2(ba-bazi #($_{S1}$ opetelo a-kpet-el-eki bazi nz-ete waabo))
c. S2(ba-bazi #($_{S1}$ oPetelo a-kpet-el-eki Ø nz-ete waabo))
d. S2(ba-bazi #($_{S1}$ oPetelo a-kpet-el-eki oPetelo Ø nz-ete...))
e. S2(ba-bazi #($_{S1}$ Ø a-kpet-el-eki oPetelo Ø nz-ete...))
f. S2(ba-bazi #($_{S1}$ Ø ba-kpet-et-eki oPetelo Ø nz-ete waabo))

That is, VA will apply cyclically to (26) to yield (27), and topicalization will apply to the same structure simultaneously or to (27), if sequentially, to yield (27). After copying the object and chomsky-adjoining it to S_1, the deletion of the original NP will yield (27c). At this point there are two potential subject NPs before the same verb. Since Dzamba-type languages disallow such structures (cf. Bokamba 1975, 1976a,b), the logical subject must be postponed to a position immediately after the verb, as in (27d). The subsequent application of deletion to the subject NP will give (27 e). This structure in turn presumably meets the structural description for VA on S_2 and its application yields (27f) which is actually (25b) after the parentheses are removed. In other words, VA

applies twice in the derivation of (25b): once on the first cycle, and then on the second cycle. If VA does not re-apply as suggested here, the resulting sentence would be the ungrammatical (25f). The same line of derivation holds true for the remaining sentences in (25).

What is disturbing here is not so much the fact that VA applies twice in the derivation of topicalized sentences in languages like Dzamba, but rather it applies twice to the same verb from presumably two different cycles. The implication here is that the 2nd application of VA deletes or nullifies the first. Now, unless one assumes that topicalization is also a cyclic rule and that it has applicational precedence over VA, this mode of application clearly constitutes an unnecessary violation and distortion of the notion of the cycle as generally understood in the standard theory (Chomsky 1965; Pullum 1979). Further, topicalization has generally been taken as a post-cycle rule (cf., e.g., Ross 1967), and no one has, to our knowledge, proposed the contrary. In fact, data from Dzamba and related languages argue against the cyclicity of topicalization.

To see this, consider the Dzamba sentences in (28) where the topicalized NP has been extracted from an embedded clause, and where the same ordering of the two rules is maintained:

(28) a. óZáki a-wó-óki kííbo óPoso a-ézá-áki bá-bana mw-énzi.
Spc.-Jack Ag-say-ed that Poso Ag-giv-ed the-child message
(Jack said that Poso gave the children a message.)

b. ímw-énzi mu-wó-óki óZáki kííbo óPoso a-ézááki bá-bana.
the-mess. Ag-say-ed Jack that P. Ag-give-ed
(The message Jack said that Poso gave (to) the children.)
*(The message said to Jack that Poso gave (to) the children.)

c. óZáki a-wó-óki kííbo ímw-énzi mw-ézá-áki óPoso bá-bana.
(Jack said that the message Poso gave (to) the children.)

d. ?ímw-énzi (ngo) mu-wó-óki oZaki kiibo mw-ézá-áki oP. bá-bana.
(The message, Jack said that Poso gave (it to) the children.)

e. *ímw-énzi a-wo-oki óZáki kííbo óPoso a-ézá-áki bá-bana.

f. *óZáki a-wó-óki kííbo ímw-énzi a-ézá-áki óPoso bá-bana.

That is, given the structure underlying (28a), the topicalization of the indirect object bá-bana from the embedded clause may yield either (28b) where the higher verb agrees with the derived subject or (28c) where the lower verb agrees with its new subject (viz. ímwénzi). In both cases subject-verb inversion is required, and the agreement is triggered by the derived subject in the relevant cycle. The topicalization of the IO may also yield the questionable (28d) where inversion has applied twice and VA is also twice controlled by the derived subject. The occurrence of sentences like (28b-d), especially (28b), argues strongly against the cyclicity of VA in languages like Dzamba. If VA were a cyclic rule, we would expect sentences like (28e-f); but as is evident here, these sentences are ill-formed. They are not even marginally acceptable. To maintain the cyclicity of VA in light of these facts would lead to unnecessary complications of the standard theory.

The problems raised here may be handled in three ways: First, one might relax the requirements imposed on the cyclic rules so as to allow them to refer to materials in a lower cycle that has already been by-passed in a derivation. This peoposal, while logically attractive, appears to have very little support from the facts under consideration here and those from other languages. In fact, the relaxation of the requirements for the cyclic rules would be only applicable to VA, since no other type of agreement rule known to us behaves in the manner described above. Hence this is not a viable alternative. Second, one might wish to reject the presently accepted analysis of topicalization (based on Ross 1967) and reformulate it as a movement rule involving sister-adjunction. Such a proposal would not only obviate some of the objections made above, especially in connection with the sentences in (25), but would also distinguish this rule further from Left Dislocation.

In particular, Left Dislocation is currently analyzed as involving copying with chomsky-adjunction and pronomilization (Ross 1967). To our knowledge this formulation is uncontroversial and accounts nicely for facts such as the Dzamba and Swahili sentences in (29) and (30):

(29) Dz. a. óPetélo a-kpét-él-éki bâzi nz-eté wâábo.
(Peter chopped/cut down (some) trees here for the women)
b. bá-bâzi, óPetélo a-bá-kpét-él-éki nz-eté wâábo.
the-women, P. Ag-them-cut-App-ed trees here
((As for) The women, Peter chopped down (some) trees here for them.)
c. ínz-eté, óPetélo a-í-kpét-él-éki bâzi wâábo.
the-trees, P. Ag-them-cut-App-ed
((As for) The trees, Peter chopped them down here for the women.)

(30) Sw. a. daktari a-li-leta ki-ti nyumba-ni.
doctor Ag-Pst-bring chair house-loc.
(The doctor brought a/the chair home.)
b. ki-ti, daktari a-li-ki-leta nyumba-ni.
chair doctor Ag-Pst-it-bring
((As for) The chair, the doctor brought it home.)
c. nyumba-ni, daktari a-li-pa-leta ki-ti.
house-loc doctor Ag-Pst-it bring
(To a specific place in the house, the doctor brought a/the chair.)[11]

Assuming that there is a pronomilization rule and that its domain involves two cycles (see Wasow 1979 for a discussion of some of the problems with this rule), the left-dislocated sentences above where the underlined clitics are correferential to the left-dislocated NPs would be possible only if Left-Dislocation is viewed as involving chomsky adjunction. Chomsky-adjunction appears to be necessary in this case but not in topicalization. The acceptance of this reformulation of topicalization, it appears to us, would remove the undesirable cycle to which VA applied for the second time to the same verb in the derivation of sentences (25b-e).

A third alternative out of these difficulties would be to reject the hypothesis that VA is a cyclic rule, at least in the Dzamba-type Bantu languages. To do this one would have to show that there are derivations in which VA applies either pre-cyclically or post-cyclically. Currently the existence of pre-cyclic rules in syntax has yet to be established convincingly, and we are unaware of the occurrence of such rules in Bantu languages. Therefore, there is no need to dwell on this alternative. There are, however, several post-cyclic rules that interact with verbal agreement: conjunction reduction, directional/locative adverb inversion, topicalization, and relativization. Of these, the interaction of the last two with VA appears to be the most clear case in proving the non-cyclcity of the latter.

2.2.3 Relativization and Verbal Agreement. We have already dealt with the case of topicalization and VA, and what we should like to turn our attention to now is the interaction of relativization with VA. To see this consider, first, the case of Swahili relative clauses.

It has been shown in Givón (1972b) and Bokamba (1976a,b) that, in addition to the universal subcategorization of relative clauses into subject and object types, Swahili distinguishes the latter further into inverted and non-inverted object relative clauses. Subject relative clauses require no subject-verb inversion, and may be analyzed in the same manner as in English, as illustrated in

(31) a. m-toto m-refu a-li-ye-anguka hapa a-me-vunja m-kono wake.
child Ag-tall Ag-Pst-Rel-fall here Ag-Perf-break arm Ag-his
(The tall child who fell (down) here broke his/her arm.)

b. m-toto m-refu amba-ye a-li-anguka hapa a-me-vunja
say-Rel Ag-Pst-fall here Ag-Perf-break
m-kono wa-ke.
(The tall child who fell (down) here broke his/jer arm.)

These sentences have identical meanings, but differ only with respect to the location of the relative pronoun: in (31a) it is prefixed onto the verb, while in (31b) it is suffixed onto a dummy root.[12] We shall refer to relative clauses like (31a) where the relative pronoun is incorporated into the verb as the bound variant, and to (31b) as the free or unbound variant. Note here that VA is unaffected in either construction.

When an object NP is relativized, however, the bound variant type entails an obligatory subject-verb inversion, whereas the unbound variant does not. The distinction here is superficial in that it does not affect the meaning of the sentence, as may be seen in

(32) a. Juma a-li-nunua vi-ti amba-vyo Maryamu a-li-taka.
Juma Ag-Pst-buy chairs say-Rel M Ag-Pst-want
(Juma bought the chairs which Maryamu wanted.)

b. Juma a-li-nunua vi-ti amba-vyo a-li-(vi-)taka Maryamu.
say-Rel Ag-Pst-them-want
(Juma bought the chairs which Maryamu wanted.)

c. Juma a-li-nunua vi-ti a-li-vyo-(vi-)taka Maryamu.
Ag-Pst-Rel-them-want
(Juma bought the chairs which Maryamu wanted.)
d. *Juma a-li-nunua vi-ti Maryamu a-li-vyo-(vi-)taka.

Notice here that the subject-inversion exhibited in the embedded clause of (32b), in contrast to the lack of inversion in (32a), may be viewed as stylistic; but the inversion exemplified in (32) cannot be so interpreted. The so-called subject postposing (Givon 1972b) that has occurred in (32c), as the ungrammaticality of (32d) attests, is obligatory. The change appears to be dictated by the surface constraint on the occurrence of double "subjects" referred to earlier. Another point to be made here is that the occurrence of the subject-verb inversion, which also characterizes the relativization of other VP-dominated constituents (e.g., instrumentals and locatives), does not change the VA pattern: VA is still triggered by the demoted subject which is en chomage (32c).

There are two possible ways that sentences like these can be accounted for: First, one might argue that (32c), for example, is derived by applying VA cyclically and then relativization (including subject-verb inversion) post-cyclically. This order of application would explain why VA is still controlled by the underlying subject, Maryamu. Second, one might maintain that (32c) is derived by applying VA post-cyclically after relativization. In this case the rule of VA would scan the entire string and copy the relevant feature specificationa of the subject NP onto the appropriate verb irrespective of the location of this subject relative to the verb. That is, the rule will copy either from the left or the right depending on the location of the subject NP at the time of the application. Both of these alternatives appear to be equally plausible, although the second might create a slight complication in the formulation of the rule; and we do not know any additional data in Swahili that would force us to choose one over the other.

Similar, but unambiguous data exist in Lingala and Dzamba to force such a choice, however; and we turn now to these languages, first, Lingala. This language, like Swahili, has two types of relative clause constructions: those involving a free relative pronoun, and those with a (verb) bound relative pronoun. These are illustrated in (33) and (34):

(33) a. mw-ǎná óyo a-sómb-áki li-toko áwâ a-kéi.
child Dem. Ag-buy-ed mat here Ag-left
(The child who bought the mat here left/has gone.)
b. mw-ǎná a-sómb-áki li-toko áwâ a-kéi.
(The child (who) bought the mat here left?has gone.)
c. mw-ǎná ó-sómb-áki li-toko áwâ a-kéi.
Rel-buy-ed
(The child who bought the mat here left/has gone.)

(34) a. mo-paya á-sómb-áki li-toko li-ye li-zál-áki áwâ.
guest Ag-buy-ed mat Dem Ag-be-ed
(The guest bought the mat which was here.)
b. mo-paya á-sómb-áki li-toko li-zál-áki áwâ.
(The guest bought the mat which was here.)
c. mo-paya á-sómb-áki li-toko lí-zál-áki áwâ.
(The guest bought the mat which was here.)

These sentences illustrate subject relativization, and there is, as stated previously, no subject-verb inversion. Verbal agreement, therefore, remains largely unaffected. These constructions differ in at least two important respects from the corresponding Swahili sentences: First, subject as well as object relative clauses in Lingala involve the use of demonstrative pronouns as a common strategy. Second, these demonstrative pronouns may be freely omitted without affecting either the morphology of the verb, as seen in the (b) sentences, or the meaning of the sentence. When there is no demonstrative pronoun underlyingly, the relative pronoun is prefixed onto the verb as the first morpheme and thereby replaces the agreement marker, as in the (c) sentences above. In most cases, except for singular nouns of the human class, this marker is similar to the agreement prefix but bears a high tone, as in (34).

Object relativization, as in the Swahili case, involves subject-verb inversion obligatorily whenever the relative pronoun is bound, but optionally when it is not:

(35) a. mo-paya a-sómb-áki li-toko li-ye Póso á-tóng-áki lelo.
Dem P. Ag-weave-ed
(The guest bought the mat which Póso weaved today.)
b. mo-paya á-sómb-áki li-toko li-ye li-tóng-áki Poso lelo.
(The guest bought the mat which Póso weaved today.)
c. mo-paya á-sómb-áki li-toko Póso á-tong-áki lelo.
(The guest bought the mat Póso weaved today.)
d. mo-paya á-sómb-áki li-toko lí-tóng-áki Póso lelo.
Rel-weave-ed P.
(The guest bought the mat which Póso weaved today.)
e. *mo-paya á-sómb-áki li-toko (li-ye) Póso li-tóng-áki...
f. *mopaya á-sómb-áki li-toko li-ye á-tóng-áki Poso...

These sentences illustrate several characteristics of object relativization. First, they show that VA in the embedded clause remains unaffected whenever the logical subject precedes its verb (35a,c). Second, sentences (35b,d) show that subject-verb inversion in the embedded clause will occur whether or not the independent "relative pronoun" surfaces; and that once inversion has occurred, the underlying subject loses its ability to trigger VA (35b,d). Instead, the derived subject (i.e., the logical object) controls VA and thereby changes grammatical relations. This conclusion is supported by the ungrammaticality of sentences like (35) which is identical to (35), except that it has the incorrect agreement prefix. (35) is ill-

formed because the embedded subject has not been postposed. Finally, the ungrammaticality of (35e-f) suggests strongly that VA in this language is based on adjacency; that is, the rule is defined on the NP which is adjacent to the verb at the point in the derivation when it applies.[13] The generalization to be made here is that VA applies after relativization, a post-cyclic rule. This being the case, VA itself, at least in this language and related ones (see Dzamba below, e.g.), must be a post-cyclic rule that is not sensitive to underlying grammatical relations.

The facts of object relativization in both Swahili and lingala exhibit obligatory and optional subject-verb inversion in the embedded clauses. Lingala shows further that the relative pronoun may be freely deleted without affecting either the agreement process or the grammaticality of the sentence. While the Lingala data are much clearer than the Swahili concerning the post-cyclicity of VA, and this is true even if we assume topicalization to be involved in such derivations, the optional occurrence of subject-verb inversion and the free deletion of the relative pronouns may have obscured the ordering of the main rules: relativization and VA. It would be highly instructive and interesting at this point to find data that exhibit only obligatory subject-verb inversion. Such data would constitute evidence of the strongest kind in that subject-verb inversion would be viewed as a necessary sub-rule of relativization, and the relationship between this rule and VA would become crystal clear.

Dzamba, to which we now turn, is such a language.[14] We have shown elsewhere that relative pronouns in this language are all bound to the verb, and that object but not subject relativization entails obligatory subject-verb inversion in the embedded clause (Bokamba 1976a,b). Subject relative clauses in Dzamba have the surface form illustrated in (36) and object relative clauses have that exemplified in (37):

(36) a. ó-mama a-ézá-ákí í-zí-bata lo-so.
the-mother Ag-give-ed the-duck rice
(The mother gave the duck some rice.)
b. ó-mama a-ézá-ákí í-zí-bata í-zi-yak-aki wâabo lo-so.
the-duck Rel-Ag-come-ed
(The mother gave the duck which came here some rice.)
c. í-zí-bata zi-komel-aki í-lo-so.
(The duck pecked on the rice.)
d. í-zí-bata í-zi-yak-aki wâabo zi-komel-aki í-lo-so.[15]
Rel-Ag-come-ed Ag-peck-ed on
(The duck which came here pecked on the rice.)

(37) a. ó-mw-âna a-ómb-áki í-lo-so loome.
(The child bought the rice today.)
b. í-zí-bata í-zi-ézá-ákí ó-mama i-lo-so zí-kéi.
Rel-Ag-give-ed the-mother
(The duck to which (the) mother gave the rice left/has gone.)
c. *í-zí-bata ó-mama a-ézá-ákí í-lo-so zí-kéi.
d. *í-zí-bata a-ézá-ákí ó-mama í-lo-so zí-kéi.

e. *í-zí-bata ó-mama í-zi-ézá-áki í-lo-so zí-kéi.

f. í-zí-bata zi-komel-aki í-lo-so í-lu-ómb-áki ómw-âna
the-rice Rel-Ag-buy-ed the-child
loome.
(The duck pecked on the rice which the child bought today.)

g. *í-zí-bata zi-komel-aki í-lo-so ómw-âna a-ómb-áki loome.

h. *í-zí-bata zi-komel-aki í-lo-so a-ómb-áki ómw-âna loome.

i. *í-zí-bata zi-komel-aki í-lo-so ómw-âna í-lu-ómb-áki
loome.

These facts illustrate several properties of verbal agreement in simple and relative clauses. First, the VA pattern exhibited in the simple sentences (36a,c) and (37a), and that in the subject relative clauses (36b,d) appears to be consistent with the hypothesis that VA is a cyclic rule: the subject prefixes in these sentences are controlled by the logical subject NPs. Second, in the object relative clauses (37b,f), however, VA in the embedded clause is controlled by the derived subject NPs: í-zí-bata and í-lo-so. These NPs became the superficial subjects of their relative clauses only after relativization, which, as we have seen, involves subject-verb inversion, had applied. If VA had applied cyclically, as it presumably did in the derivation of the sentences in (36), the expected outputs would have been sentences (37c-h); but as evidenced here these are ungrammatical. Third, as in the cases of Swahili and Lingala, object relativization in Dzamba requires subject-verb inversion in the embedded clause; this property accounts for the ungrammaticality of (37e,i) which are otherwise well-formed except that the logical subjects have not been postposed. (37c) is partly ill-formed for the same reason. The generalization that emerges from these facts is that VA applies after relativization, a post-cyclic rule, and is itself a post-cyclic rule.

Now, it is entirely possible that Dzamba-type languages (including Lingala) can only relativize on subjects in the Keenan-Comrie (1977) accessibility hierarchy, and that relativization of other terms requires a strategy of topicalization.[16] Even if this were the case, VA would still have to be considered a post-cyclic rule as long as the hypothesis that topicalization is a postcyclic rule is maintained. To see this, it is sufficient to consider just one derivation under the cyclic analysis of VA. Take, e.g., sentence (37):

(38) a. S2(izi-bata #($_{S1}$ o-mama -eza-aki izi-bata ilo-so)$_{S1}$ # -kei)

b. (izi-bata #(o-mama a-eza-aki izi-bata ilo-so) # -kei)

c. (izi-bata #(o-mama a-eza-aki iai-bata ilo-so) # zi-kei)

d. (izi-bata #(i-o-mama a-eza-aki Ø ilo-so) # zi-kei)

or e. (izi-bata #(o-mama a-eza-aki Ø ilo-so) # zi-kei)

f. (izi-bata #(i- a-eza-aki o-mama Ø ilo-so) # zi-kei)

or g. (izi-bata #(a-eza-aki o-mama Ø ilo-so) # zi-kei)

That is, given the structure in (38) which roughly underlies sentence (37), VA will apply cyclically to S_1 and S_2 to yield (38b) and (38c),

respectively. Then relativization would apply postcyclically to (38c) by either relative-pronomilizing izi-bata and fronting the relative marker i- to yield (38d), or simply by deleting the second occurrence of this noun to yield (38e). Subject-verb inversion would then apply to either (38d) to produce (38f), or to (38e) to produce (38g). Both (38f) and (38g) will yield ill-formed sentences after the phonological rules have applied and the parentheses are removed. In particular, (38f) will produce (38h) below, while (38g) will yield(37d) above:

(38) h. *ízí-bata í-a-ézá-ákí/ a-íézá-ákí ó-mama ílo-so zi-kei.
Rel-Ag-give-ed Ag-Rel-give-ed

This sentence is ungrammatical because it has the incorrect agreement marker regardless of the sequencing of the relative pronoun with respect to the agreement marker.

If topicalization is taken to be an integral part of non-subject relativization in Dzamba, then the derivation in (38) would involve at least two extra steps, viz. the following:

(39) a. (izi-bata #(izi-bata #(o-mama a-eza-aki Ø ilo-so)#)# zi-kei)
b. (izi-bata #(izi-bata #(a-eza-aki o-mama Ø ilo-so)#)# zi-kei)

These would precede (38d), and would conceivably account for the control of the agreement prefixes by the derived subject NPs in each case. But as stated previously, unless we reject the hypothesis that topicalization is a postcyclic rule, its inclusion in relativization in the Dzamba-type languages, but not necessarily in the Swahili-type, would not contradict our argument that VA is a postcyclic rule.

If the hypothesis that VA is a postcyclic rule is accepted, the correct derivation for sentences like (37b) would be as follows:

(40) a. S2(izi-bata #($_{S1}$ o-mama -eza-aki izi-bata ilo-so)S1 # -kei)
b. (izi-bata # (izi-bata o-mama -eza-aki Ø ilo-so) # -kei)
c. (izi-bata #(izi-bata Ø -eza-aki o-mama Ø ilo-so)# -kei)
d. (izi-bata #(izi-bata i-zi-eza-aki o-mama Ø ilo-so)# zi-kei)
or e. (izi-bata #(Ø i-zi-eza-aki o-mama Ø ilo-so)# zi-kei)
f. izi-bata i-zi-eza-aki o-mama ilo-so zi-kei.
(The duck to which (the) mother gave the rice left/has gone.)

That is, relativization would apply to (40a) by fronting the object NP izi-bata to the beginning of the embedded clause to yield (40b), then subject-verb inversion will apply to (40b) to produce (40c). This structure in turn would meet the structural description of VA, and its application would yield either (40d) or (40e). In the latter case the agreement prefix is presumably controlled, in both clauses, by the head noun. If we assume topicalization to be involved in such cases, then strings (39a-b) would be included and the same argument will hold.

While the data from Swahili are subject to ambiguous interpretations with regard to the proper ordering of VA and relativization, those from

guages, strongly suggests that VA operates non-cyclically (see, e.g., Bokamba, forthcoming). In most cases, as certain studies have suggested (Morgan 1972; Hawkinson and Hyman 1974; Givón 1976), VA is based on pragmatic considerations such as topic/comment, and varying degrees of animacy/inanimacy.

Our hunch is that further studies of VA will find it to be a complex non-cyclic rule. Whether this will turn out to be true will have to await further research. In the meantime, the facts presented here and in other studies, including Vanek (1977) where the cyclicity of VA is questioned but not rejected explicitly, seriously challenge the current analyses on all counts.

NOTES

*This research was supported by the University of Illinois Research Board for the 1979-80 academic year. We are deeply indebted to the the Research Board for this and past support which will soon result in the writing of a book-length study on the syntax of Bantu languages. We are also grateful to Charles Kisseberth, Salikoko Mufwene, and Alexis Takizala Masoso for comments on an earlier version of this paper.

[1]Alexis Manaster-Ramer has informed me (in a discussion subsequent to a lecture at CLS in February) that Lawler's data may not be accurate. Whether this is correct or not will not affect the present analysis.

[2]The Lingala and Swahili data presented here are drawn from the standard dialects of these languages, because they illustrate better the processes under discussion here than the non-standard dialects. This is particularly true of Lingala.

[3]Luganda, which is known to have the largest number of noun classes to date, for example, has twenty-one; it does not have classes 19 and 21 (cf. Welmers 1973: 165).

[4]One of the main differences in this respect between Dzamba/Lingala and Swahili is that the latter has locative classes, while the former do not.

[5]I am indebted to Hassan Marshad, a native speaker of Swahili, for this observation.

[6]This is true only of the standard dialects of the Lingala-type languages, because a different pattern which recognizes this dichotomy has emerged in the non-standard dialects. The change involves, in some cases, a drastic reduction of the agreement prefixes as to lead to a general agreement system based on the [human] vs [non-human] dichotomy; and in other cases along the [animate] vs [inanimate] opposition (see Bokamba 1977, 1979, for some discussion of this).

[7]Givón has since abandoned this position for a pragmatic approach

based on the notion of topic-comment (Givón 1976).

[8]But uncommon passives such as those involving locatives in certain Bantu languages do present such problems to Relational Grammar. For some discussion of these constructions see Dalgish (1976) and Dalgish and Sheintuch (1977).

[9]The term cyclic here will refer to strict cyclicity, but not to its variants suggested in some recent studies (e.g., Grinder 1972; Postal 1974; Freidin 1976). Further, unless otherwise stated, the cyclicity and non-cyclicity of the rules discussed here in connection with VA will be taken for granted.

[10]I am assuming here that topicalization in Dzamba automatically entails definitivization (see Bokamba 1976b).

[11]This is one of three possible locative constructions; the others would be:

a. nyumbani, daktari a-li-ku-leta ki-ti.
(To some place at the house, the doctor brought a/the chair.)
b. nyumba-ni, daktari a-li-m-leta ki-ti.
(To a specific place inside the house, the doctor brought a/the chair.)

[12]This root is actually an old verb which originally meant "say", but has since become obsolete as an independent verb stem.

[13]In a forthcoming study, chapter 5, I show this point with regard to the strategies of the resolution of gender-conflicts in VA in conjoined sentences (Bokamba 1980 [winter]).

[14]Likila, and perhaps Libinza, also behaves in this manner. Evidence from these languages will appear in Bokamba (1980).

[15]I have shown elsewhere (Bokamba 1976b) that morphemes like -zi- in the verb of the embedded relative clauses in Dzamba has to be viewed as a verbal agreement prefix which is independent from the relative marker. This conclusion is based on the occurrence of the negative marker -ta- between the relative marker and such VA morphemes, as in:

í-zí-bata í-tá-zi-éza-áki ó-mama ílo-so émbá zi-keí.
the-duck Rel-Neg-Ag-give-ed the mother rice Not Ag-left
(The duck to which (the) mother did not give any rice left.)

[16]I am indebted to Charles Kisseberth and Alexis Manaster-Ramer for this suggestion.

REFERENCES

ASHTON, E.O. 1944. Swahili Grammar. London: Longmans.

BOKAMBA, E.G. 1976a. "Relativization in Bantu Languages Revisited." In Peter A. Reich, ed., The Second LACUS Forum 1975, pp. 38-50. Columbia, S.C.: Hornbeam Press.

BOKAMBA, E.G. 1976b. Question Formation in Some Bantu Languages. Ann Arbor: University Microfilm International.

BOKAMBA, E.G. 1976c. On the Syntax and Semantics of Wh-Questions in Kikongo and Kiswahili. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, pp. 65-88.

BOKAMBA, E.G. 1977. "The Impact of Multilingualism on Language Structures: The Case of Central Africa." Anthropological Linguistics 19. 181-202.

BOKAMBA, E.G. 1979. "Noun Class and Agreement Changes in Bantu Languages." Paper read at the Colloquium on Grammatical Changes, University of Leiden, The Netherlands, September 1979.

BOKAMBA, E.G. (forthcoming). Aspects of Bantu Syntax.

CHOMSKY, N. 1965. Aspects of the Theory of Syntax. Cambridge, MA: The M.I.T. Press.

CROCKETT, D.B. 1976. Agreement in Contemporary Standard Russian. Cambridge, MA: Slavica.

DALGISH, G.M. 1976. "Passivizing Locatives in OluTsootso." Studies in the Linguistic Sciences 6. 57-68.

DALGISH, G.M. and G. Sheintuch. 1977. "On the Justification for Language-specific Sub-grammatical Relations." Studies in African Linguistics 8. 219-39.

FREIDIN, R. 1976. The Syntactic Cycle: Proposals and Alternatives. Duplicated, Indiana University Linguistics Club.

GIVON, T. 1972a. Studies in ChiBemba and Bantu Grammar. Studies in African Linguistics, Supplement 3. UCLA.

GIVON, T. 1972b. "Pronoun Attraction and Subject Postposing in Bantu." In P.M. Peranteau, J.N. Levi, and G.C. Phares, eds., The Chicago Which Hunt: Papers from the Relative Clause Festival, pp. 190-97. The University of Chicago: The Chicago Linguistics Society.

GIVON, T. 1976. "Topic, Pronoun, and Grammatical Agreement." In Charles Li, ed., Subject and Topic. pp. 149-88. New York: Academic Press.

GREEN, G. 1977. "Do Inversions in English Change Grammatical Relations?" Studies in the Linguistic Sciences 7. 157-81.

GRINDER, J. 1972. On the Cycle in Syntax. In John P. Kimball, ed., Syntax and Semantics 1, pp. 84-112. New York: Academic Press.

HAWKINSON., A.K. and L.M. Hyman. 1974. "Hierarchies of Natural Topic in Shona." Studies in African Linguistics 8. 199-218.

KEENAN, E.L. 1976. Toward a Universal Definition of Subject. In Charles Li, ed., Subject and Topic, pp. 303-34. New York: Academic Press.

LAWLER, J. 1977. "A Agrees with B in Achenese: A Problem for Relational Grammar." In P. Cole and J.M. Sadock, eds., Syntax and Semantics 8: Relational Grammar, pp. 219-48. New York: Academic Press.

MORGAN, J.M. 1972. "Verb Agreement as a rule of English." In P.M. Peranteau, J.N. Levi, and G.C. Phares, eds., CLS 8, pp. 278-86. The University of Chicago: The Chicago Linguistic Society.

PERLMUTTER, D. and P. Postal. 1974. Relational Grammar: LSA Linguistic Notes. Mimeographed.

POSTAL, P. 1974. On Raising: One Rule of English Grammar and its Theoretical Implications. Cambridge, MA: The M.I.T. Press.

PULLUM, G.K. 1979. Rule Interaction and the Organization of a Grammar. New York: Garland Publishing, Inc.

ROSS, J.R. 1967. Constraints on Variables in Syntax. M.I.T. Doctoral Dissertion. Bloomington: Indiana University Linguistics Club.

VANEK, A.L. 1977. Aspects of Subject-verb Agreement. Edmonton, Canada: Linguistic Research, Inc.

WASOW, T. 1979. "Problems with Pronouns in Transformational Grammar." In F. Heny and H.S. Schnelle, eds., Syntax and Semantics 10: Selections from the Third Groningen Round Table, pp. 199-222. New York: Academic Press.

WELMERS, W.E. 1973. African Language Structures. Berkeley, CA: University of California Press.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

ANOTHER LOOK AT NARA CONDITIONALS*

Susan Meredith Burt

In The Structure of the Japanese Language, Kuno lists six semantic conditions on the use of conditional clauses with nara. This paper is an attempt to refine and collapse Kuno's conditions. Two conditions are proposed to replace Kuno's six. In addition, a new condition is proposed, and then eliminated by Gricean principles.

Section 1. reviews Kuno's conditions on nara sentences. Sections 2. and 3. show some inadequacies in Kuno's conditions and propose two conditions of greater generality. Section 4. discusses some differences between if and nara. Section 5. gives conclusions.

1. Kuno's conditions on nara.

In this section, I will review Kuno's six conditions and some of his discussion of them. The first two conditions have to do with the assertiveness of nara clauses and the points of view of speaker and hearer:

> (i) The speaker presents S_1 as the assertion by the hearer (or people in general) without completely agreeing with it.
> (ii) It is ungrammatical unless S_1 represents a state or an action that the hearer (or people in general) can assert.
> (Kuno 1973:176)

These conditions seem to be necessary to rule out sentences like those in (1) (Kuno's 2b,3b,4b,5b), where the conditional clause (or S_1 in the whole structure S_1 nara S_2) describes the internal state or feeling of the speaker:

(1) *Boku ga iku tumori nara, John mo sono tumori desyoo.
'If I am intending to go, John will also be intending to go.'

*Boku ga ikitai nara, John mo ikitagatte iru desyoo.
'If I want to go, John will also want to go.'

*Nihon ni iku keikaku nara, okane ga iru desyoo.
'If I am planning to go to Japan, I will need some money.'

*Samui nara, motto kimasu.
'If I am cold, I will put on more clothes.'

Reference to "the hearer or people in general" is made because one cannot comment on someone else's internal state or feeling in Japanese without adjustments to the predicate of the sentence. Thus, the statements in (2) are unacceptable, since they consist of comments on the internal state of

persons other than the speaker.

(2) *Anata wa ikitai desu.
'You want to go.'

*John wa ikitai desu.
'John wants to go.'

Likewise, people in general cannot describe the speaker's internal state; thus, restricting S_1 clauses to assertions that can be made by the hearer or other persons (Kuno's condition (ii)) rules out sentences like those in (1).

Kuno's third condition further restricts S_1 in nara sentences to assertions which have some degree of uncertainty to them. Matter-of-fact statements are ruled out: "(iii)This pattern cannot be used when S_1 is an event that is certain to happen," (Kuno 1973:176). This rules out a sentence like (3), because summer is certain to come eventually:

(3) *Natu ni naru nara, New York ni ikimasu.
'If summer comes (if it becomes summer), I will go to New York.'

Kuno's first three conditions on nara sentences deal with S_1, the conditional clause itself; in section 2., I will show that collapsing these three conditions into one will allow greater generalization in the grammar.

Kuno's second three conditions restrict the content of S_2, the main clause:

(iv) S_2 must represent the speaker's evaluation, supposition, will, resolution, request or order.
(v) It is ungrammatical if S_2 represents a state or action whose realization depends upon the future realization or completion of the action represented by S_1.
(vi) If S_2 represents requests, commands, volition, or determination, then (v) does not apply.

(Kuno 1973:176)

Kuno uses condition (iv) to explain why the S_2 of nara sentences cannot be in the past tense; a report of a past event cannot be the speaker's evaluation, supposition, will, resolution, request or order:

(4) *John ga kita nara, Mary wa kaetta.
'If/when John came, Mary left.' (Kuno's 11b)

Kuno's conditions (v) and (vi) account for the difference between the sentences of (5) (Kuno's 13).

(5) a. Nihon ni iku nara, okane ga iru desyoo.
'If you are going to Japan, I suppose you need money.'

b. *Nihon ni iku nara, Amerika ga natukasiku naru desyoo.

'If you go to Japan, you will miss America, I suppose.'

The S_2 of sentence a. represents the speaker's evaluation, and (5a) is therefore grammatical. The S_2 of sentence b., on the other hand, depends on the realization of S_1 for its realization; consequently, (5b) is ungrammatical, since it violates Kuno's condition (v). This condition, however, does not hold if S_1 is in the past tense, as shown by (6).

(6) Nihon ni itta nara, Amerika ga natukasiku naru desyoo.
'If you went to Japan, you would miss Amerika, I suppose.'

Although Kuno discusses this exception to condition (v), he does not build it into his statement of the condition. However, I hope to show in section 3. that consideration of this exception can lead to an improved formulation of the condition.

This section has outlined Kuno's conditions on nara conditionals. In the next two sections I hope to show that Kuno's statements are inadequate, and that more general statements can both simplify the grammar and cover more of the facts.

2. A re-analysis of conditions (i), (ii), and (iii).

In this section I will show that Kuno's conditions (i), (ii) and (iii) are inadequate, and that they can be replaced by one single condition.

Both of Kuno's conditions (i) and (ii) make reference to assertions by the hearer or some other person; this reference, I would like to show, is unnecessary. It is possible to use nara clauses where the hearer has made no assertion at all about S_1; indeed, it is possible to use nara clauses where the hearer cannot make such an assertion (and it may be possible to use nara in a soliloquy, where there is no hearer at all). Consider the following cases:

Imagine a situation where the speaker invites the hearer to a party. The speaker knows that the hearer's friend John is in the habit of coming to Champaign frequently and without warning, but he does not know whether John is coming on the day of the party, and the hearer has not mentioned John at all. It is possible, nevertheless, for the speaker to use nara as in (7), in spite of Kuno's conditions.

(7) John ga sono hi ni Champaign ni kuru nara, isshoni kite kudasai.
'If John comes to Champaign that day, please come together.'

Similarly, one could use (8) without a previous assertion by anyone that Mary was expected.

(8) Mary ga koko e kuru nara, kono hon o kanojo ni kaeshite kudasai.
'If Mary comes here, please give this book back to her.'

Even when the hearer contradicts the assertion of S_1 in the discourse, nara may be used. The discourse in (9) was judged only slightly questionable.

(9) A: Mary ga koko e kuru nara, kono hon o kanojo ni kaeshite kudasai.
'If Mary comes here, please give this book back to her.'

B: Kyoo wa Mary wa koko e kimasen.
'Mary isn't coming here today.'

Kuno's conditions would rule out both (8) and (9), but neither was judged unacceptable.

Finally, nara may be used in a situation where neither speaker nor hearer can make any assertion about the truth of S_1. Imagine a small child who naughtily shoots arrows from his toy bow at the livingroom door.[1] His father takes the toy away from him and says to the mother:

(10) Moshi kare ga hontoo ni doa o moo utanai to iu nara kore o
if he really door anymore shoot-neg. says if this
kaeshite yarinasai.
return give-imp.
'If he says he really won't shoot at the door anymore, give this back to him.'

In this situation, neither the speaker nor the hearer (nor anyone else, for that matter) is in a position to assert whether the necessary promise will be made. Kuno's conditions make no prediction about this situation, yet nara can be used.[2]

So far, I have shown that Kuno's conditions would rule out sentences that are acceptable in some dialects, at least. But Kuno's conditions suffer from one further, devastating weakness: condition (ii), which allows statements in S_1 about "a state or an action that the hearer (or people in general) can assert," will allow statements by other people about the speaker. Kuno gives an example:

(11) Boku ga baka nara, kimi no baka desu.
'If I am a fool (as you say I am), so are you.'

The problem with this condition comes up when we examine the cases, mentioned in section 1. above, where one makes grammatical adjustments to the predicate in order to comment on the internal state of another person. For example, the ungrammatical sentences of (2) could be adjusted as in the following:

(12) Anata wa ikitagatte imasu.
'You show signs of wanting to go.'

John wa ikitagatte imasu.
'John shows signs of wanting to go.'

Given that people in general can make statements like these about the speaker, Kuno's condition (ii) would predict that the following is grammatical, which it most emphatically is not:

(13) *Boku ga ikitagatte iru nara, kaerimasu.
'If I show signs of wanting to go, I will leave.'

Thus, even for dialects where examples (7) through (10) are questionable, Kuno's conditions are inadequate, in that they predict that (13) is acceptable.

How can we express the restrictions on nara clauses which rule out sentences like (1), (3), and (13), yet still allow the acceptable sentences of (7) through (10)? I would propose a condition on nara which focuses on the speaker rather than on the "hearer or people in general." Condition (14) does just that:

(14) In the structure S_1 nara S_2, the speaker cannot be committed to the truth of S_1, whether because of doubt, ignorance or disbelief, though he may have reason to believe in the possibility of S_1.

Condition (14) will rule out S_1's which represent certain events (such as the eventual coming of summer), and statements about the speaker's own internal feeling, without ruling out S_1's about which the hearer has made no statement or may not be able to make a statement. Condition (14) will do all the work of Kuno's conditions (i), (ii), and (iii), avoid some of the pitfalls of their formulation, and of course, reduce the number of statements in the grammar.

3. Kuno's (iv), (v) and (vi).

Kuno's second three conditions do not allow such a quick re-analysis. But in this section I will try to refine and collapse them, although it may be by means of a more circuitous argument.

Kuno's second three conditions are concerned with the S_2 of the nara construction, the main clause. It will be useful to divide main clauses into assertions (or statements) and other kinds of speech acts, for the purpose of the analysis. I will show that main clauses in nara sentences are subject to general restrictions on main clauses, but that assertions with nara are subject to further restrictions as well.

As Kuno's conditions state, statements of intent and volition are acceptable in S_2. Evaluations of a situation (i.e., guesses) and questions are also acceptable, as shown by the sentences of (15).

(15) John ga kuru nara, watakusi wa kaerimasu.
'If John is coming, I will leave.'

John ga kuru nara, watakusi wa kaeritai desu.
'If John is coming, I want to leave.'

John ga kuru nara, Mary wa kaerimasu.[3]
'If John is coming, Mary will leave.'

John ga kuru nara, anata wa kaerimasuka?
'If John is coming, are you going to leave?'

John ga kuru nara, anata wa kaeritai desuka?
'If John is coming, do you want to leave?'

Just as in main clauses, however, S_2's in nara sentences are unacceptable if the subject is the addressee, and the verb is present indicative, with future interpretation, as shown by (16) and (17), for nara and ordinary main clauses, respectively.

(16) *John ga kuru nara, anata wa kaerimasu.
'If John is coming, you're going to leave.'

(17) A: Kore kara nani o shimashyooka?
'Now what are we going to do?

B: *Anata wa kaerimasu.
'You're going to leave.'

As the English glosses indicate, this form of the verb has semi-imperative force. My informant found this usage acceptable only in situations involving talking to small children. The restriction for main clauses holds for main clauses of nara sentences as well. In both cases, an imperative is far more acceptable:

(18) Kaette kudasai.
'Please leave.'

John ga kuru nara, kaette kudasai.
'If John is coming, please leave.'

In general, the S_2 of nara is subject to the same conditions as regular main clauses. This should enable us to eliminate Kuno's condition (iv) from the grammar.

However, there are important exceptions to our generalization that S_2 clauses parallel ordinary main clauses. These exceptions are of two types: one set of exceptions involves the sequence of tenses in nara sentences; the other set of exceptions has to do with the semantic content of S_2. Both of these sets of exceptions concern statements, not other kinds of speech acts, in S_2. These will be discussed in the following subsections.

3.1 Sequence of tenses in nara sentences.

An important set of restrictions on the S_2 in nara statements is the set of restrictions on tenses in S_1 and S_2, often called sequence of tenses in traditional grammar. It will be seen that some of the restrictions on S_2 depend on the tense of S_1, so we will return briefly to a discussion of S_1.

Briefly, the following tenses are possible in S_1. (19) lists the Japanese forms and the rough English translation equivalents.

(19) John ga kuru nara 'if John will come, if John is coming'

John ga kita nara 'if John comes, if John has come'

John ga kita no nara[4] 'if John came'

John ga kite iru nara 'if John has come, if John is here'

Kuno discusses one restriction, which his condition (v) is designed to cover, that the present/future (e.g. kuru) in S_1 is ungrammatical "if S_2 represents a state or action whose realization depends upon the future realization or completion of the action represented by S_1" (Kuno 1973:176). This is designed to rule out sentences such as those of (20) (Kuno's 19):

(20) *John ga sinu nara, Mary ni isan ga hairu hazu desu.
'If John is to die, it is expected that Mary will enter into the inheritance.'

*Ame ga huru nara, kimoti ga ii.
'If it is to rain, I will feel refreshed.'

*Kimi ga Nihon ni iku nara, sabisiku naru desyoo.
'If you are to go to Japan, I will miss you.'

*Nihon ni iku nara, nihongo ga zyoozu ni naru desyoo.
'If you are to go to Japan, you will become fluent in Japanese.'

*Gohan o tabenai nara, onaka ga sukimasu yo.
'If you are not going to eat, you will get hungry.'

If the verb of S_1 is in the past, however, these sentences become acceptable, as Kuno noted, as the example of (21) shows.

(21) John ga sinda nara, Mary ni isan ga hairu hazu desu.
'If John died, it is expected that Mary will enter into the inheritance.'

I do not have any counterexamples to this condition of Kuno's, and it may have to remain; it might be possible, however, to rephrase this condition, as (22) below:

(22) In statements with nara, if the realization of S_2 depends upon the completion of the action in S_1, the tense (or aspect) of S_1 must reflect this by being in the past.[5]

Thus Kuno's condition (v), which was expressed as a semantic condition on S_2's, has been replaced by a condition on the tense of S_1. Also, restricting this condition to statements enables us to eliminate Kuno's condition (vi) altogether.

So far, we have managed to eliminate Kuno's first three conditions with condition (14), and to deal with Kuno's (v) and (vi) with condition (22). Kuno's condition (iv), however, covers another restriction on the sequence of tenses in nara statements, the restriction on the tense of S_2. The verb of S_2 may not be in the past, as shown by (23).

(23) *John ga kuru nara, watakusi wa kaerimashita.
'*If John is coming, I left.'

*John ga kita nara, watakusi wa kaerimashita.
'*If John has come, I left.'

*John ga kita no nara, watakusi wa kaerimashita.
'If John came, I left.'

This is not surprising; it seems peculiar to put a condition on a single past event (though in English conditions are acceptable on statements about past habitual actions). This restricting of nara conditionals to non-past sentences is further discussed, along with related data, in the next section.

3.2 Assertions of the obvious in S_2.

In 3.1., it was shown that the past tense was unacceptable in S_2, and it was noted that putting a condition on a statement of fact--which a report of a past event presumably is--seems nonsensical. In this section, it will be shown that other statements of obvious facts are unacceptable in S_2 as well.

For example, comments on the wishes of another person, even when these are adjusted so as to be grammatical (by adding -gatte) in ordinary main clauses (see (24)), are not permissible in the S_2 of nara sentences, as shown by (25).

(24) Mary wa kaeritagatte imasu.
'Mary shows signs of wanting to leave.'

(25) *John ga kuru nara, Mary wa kaeritagatte imasu.
'If John is coming, Mary shows/will show signs of wanting to leave.'

*John ga kita nara, Mary wa kaeritagatte imasu.
'If John comes, Mary shows signs of wanting to leave.'

*John ga kita iru nara, Mary wa kaeritagatte imasu.
'If John has come, Mary shows signs of wanting to leave.'

This is not a general ban on the present progressive (-te imasu) in S_2, as shown by the acceptable sentences of (26).

(26) Sensei ga kita nara, kurasu wa hajimatte imasu.[6]
'If the teacher has come, class has started.'

Matsuri ga hajimatte iru nara, tako wa agatte imasu.
'If the festival has started, the kites are flying.'

There are two possible reasons for the ungrammaticality of (25). One possibility is that the future interpretation is impossible with comments on the internal feeling of other persons, probably because one cannot pre-

dict someone's future internal feeling. The other possibility is that the present interpretation of this tense, 'Mary shows signs of wanting to leave,' is rather senseless if a conditional is attached to it. If Mary shows signs of wanting to leave, this fact is probably obvious, and needn't be subject to a condition.

I would like to propose that past tenses in S_2 and comments on the evidence for a third person's wishes in S_2 are ungrammatical because there is no point in qualifying an obvious fact with a conditional clause. This interpretation of the facts receives further support from the following sentences:

(27) ??Kore ga hontoo nara, Fuji san wa takai desu.
'If that is true, then Mount Fuji is high.'

The acceptability of this sentence depends on context. If one is discussing a system for classifying mountains by height, this sentence might be acceptable; but if one has just learned that high mountains in Japan include Fuji, Aso, etc., this sentence is not acceptable.

(28) *Shimboo shita/suru nara, haru ga kimasu.
'If we are patient, spring will come.'

It is obviously true that spring will eventually come, whether we are patient or not. The unacceptability of (28) seems to result from qualifying an obviously true statement with a conditional.

(29) *Sora ga kurai/kurakatta nara, tsuki ga noborimasu.
'If the sky is dark, the moon will rise.'

This sentence is unacceptable in the same way that (28) is; the moon will certainly rise, regardless of the state of the sky; again, putting a condition on an obviously true statement leads to unacceptability. These sentences are unacceptable in much the same way that the English sentence (30) is:

(30) *If 100% of the electorate had voted, Carter is president now.

The generalization for nara sentences seems to be that expressed in (31).

(31) In statements qualified by nara conditionals, S_2 may not be an obvious truth, or a statement of undisputed fact.

This captures the ban on past tenses in S_2, the ban on comments about evidence of a third person's wishes, and the ban on other obvious facts in S_2 as illustrated in (27), (28) and (29). Condition (31) is roughly equivalent to Kuno's condition (iv).

However, it is probably not necessary to add statement (31) to the grammar of Japanese, since the facts covered by (31) follow from the Gricean principles thought to govern conversation. Adding conditions to statements of undisputed fact adds irrelevancies and unnecessary information; Grice's principles of relation and quantity may suffice, therefore, to rule out the

sentences ruled out by (31) or Kuno's (iv).[7,8]

Karttunen and Peters (1977) show how it is unnecessary to assume the counterfactuality of subjunctive conditionals in English, since this will be derivable by the use of Gricean principles and contexual information. In sentences like (28), (29) and (30), however, this is not the case. If the consequent (S_2) is obviously true, as it is in these examples, this suggests in conversation[9] that the antecedent clause (S_1) is also true. But this contradicts our condition (14) on the use of nara, which states that the speaker cannot be committed to the truth of S_1. Thus an obviously true S_2 leads to contradictory assumptions about the truth of S_1 on the part of the speaker. This kind of contradiction cannot be untangled by Gricean principles; in fact, it violates the principle of quality ("Only say what you believe to be true") most flagrantly. This leads to unacceptable sentences.

In section 2. I showed that the S_1 of a nara sentence had to represent something whose truth the speaker was not committed to. If he is committed to the truth of S_2, however, then the qualification of this certainty (S_2) by an uncertainty (S_1) is not only nonsensical in conversation, it is unacceptable in Japanese.

4. Some differences between nara and if.

So far, I have managed to boil down Kuno's six conditions on the use of nara to two, conditions (14) and (22) above, repeated here for convenience:

(14) In the structure S_1 nara S_2, the speaker cannot be committed to the truth of S_1, whether because of doubt, ignorance or disbelief, though he may have reason to believe in the possibility of S_1.

(22) In statements with nara, if the realization of S_2 depends upon the completion of the action in S_1, the tense (or aspect) of S_1 must reflect this by being in the past.

I have tried to show that these two conditions are sufficient for predicting correct use of nara, the third condition (31) being unnecessary because of Gricean principles of conversation. The question now arises: are both conditions (14) and (22) necessary? Can't we just say that nara is a conditional and let universal grammar take care of the details?

Conditions (14) and (22) are both necessary; nara differs from English if, for example, in essential ways. First, condition (14) is necessary to disallow sentences like those in (1) and (3) above. The English equivalents of many of these sentences are perfectly acceptable, as shown by (32).

(32) If I want to go, John will also want to go.
If I am cold, I will put on more clothes.
If I am unhappy, I will drown my sorrows in sake.

Thus, Japanese differs from English here, and universal grammar (if any)

will not suffice; a language-specific statement is necessary.

Furthermore, condition (14) is necessary to distinguish nara from other conditionals in Japanese, notably tara. Tara does not have a condition like (14)--the speaker may be certain of the truth of S_1 in tara sentences--and tara, unlike nara, may co-occur with a past tense in S_2, as shown by (33).

(33) Natu ni nattara, yoku New York ni ikimasita.
'When summer came, I went to New York' (example from Kuno 1973:183).

Tara sentences can have both if and when interpretations, as shown by (34):

(34) John ga kitara, boku wa kaeru.
'If John has come, I will leave.'

John ga kitara, Mary ga kaetta.
'When John came, Mary left.'

This is not true of nara conditionals. Thus, to distinguish between tara and nara, we need condition (14) in the grammar.

Condition (22) is also necessary to rule out in Japanese certain sentences whose English equivalents are acceptable. Most of the English glosses of (20) are acceptable with the present tense in S_1, but the Japanese sentences have to be ruled out. Thus, condition (22), like (14), is necessary in the grammar of Japanese.

Finally, nara differs from English if in another interesting and subtle way. Karttunen and Peters (1977) give examples of English counterfactuals where the antecedent (S_1) is presupposed to be true in one case (35) and false in another (36).

(35) If Mary were allergic to penicillin, she would have exactly the symptoms she is showing.

(36) If Mary were allergic to penicillin, she would have exactly the symptoms she is showing. But we know she is not allergic to penicillin.

The point of these examples is to show that the assumption of counterfactuality, or its absence, is derivable by the use of Gricean principles of conversation combined with contextual information. If and the subjunctive can be used in both cases.

This does not seem to be the case with nara. For the case similar to (35), where the S_1 seems to be presupposed to be true, nara can be used, in spite of our condition (14):

(37) Moshi hei hiibaa nara, Taroo wa ima no yoo ni kushami o shimasu.
if hay fever if now of manner sneeze do
'If Taroo had hay fever, he would sneeze in the way he is now.'

But if the following context suggests a counterfactual reading for the conditional clause, as in (36), nara cannot be used, as shown by (38).

(38) *Moshi hei hiibaa nara, kono yoo ni kushami o suru desyoo.
Shikashi kore wa hei hiibaa dewa arimasen.
'If it were hay fever, he would sneeze in this fasion.
But this isn't hay fever.'

My informant has told me that if nara is used in this case, the speaker is uncertain as to whether the disease is hay fever (if this is the case in (37), then that sentence is not really analogous to (35) in its presupposition); but in sentence (38), the speaker is certain that the disease is not hay fever--this absence of uncertainty makes nara unacceptable.

I do not have a ready solution for the problem posed by these last examples; they may be important counterexamples to the analysis proposed in this paper, but they need more investigation. The analysis proposed here will at least provide a foundation for that research.

5. Conclusions.

Kuno's six conditions on the use of nara were shown to be inadequate and unnecessary. I have replaced them with two conditions; I have also shown that a third possible condition on the felicitous use of nara can be omitted from the grammar because Gricean principles of conversation are adequate to cover the examples it accounts for. The conditions I have proposed are necessary to the grammar of Japanese, and should provide a basis for more research into nara conditionals.

NOTES

*Thanks to Michio Tsutsui for lots of data and advice, and to Larry Stout for advice and lots of Mulliner's Buck-U-Uppo.

[1]Michio Tsutsui created this delightful context.

[2]S. Makino has informed me that sentences (7) through (10) are unacceptable in his dialect. For speakers of this dialect, therefore, this argument would not hold.

[3]Kuno marks this as unacceptable with a "pure future" interpretation, but my informant found this acceptable.

[4]The no here is a nominalizer; my informant says that this shows the conditionality of the nara clause more clearly. This phrase cannot have a counterfactual reading, however.

[5]The -ta/da of kita, sinda, etc. is the past marker.

[6]The present progressive receives a perfective interpretation in "verb expressing instantaneous or momentary events" (Yasuo et al. 1973:86).

[7]S. Makino has called the following counterexample to my attention:

(i) shinboo sureba, sono uchi haru ga kimasu.
'If you are patient, in due time spring will come.'

It may be that this sentence will make the inclusion of (31) necessary in the grammar of nara sentences, as opposed to ba conditionals. Another possibility is that the use of sono uchi, 'in due time,' makes this statement non-obvious, and thus not subject to (31), but this question is still open for future research.

[8]What is actually relevant in a conditional clause depends on context, of course. When I explained the context where one might make such a statement as (i), my informant willingly produced it:

(i) Kyoo ga kayoobi nara, koko wa Berugii no hazu desu.
'If today is Tuesday, this place is surely Belgium.'

[9]Although not in classical logic.

REFERENCES

ALFONSO, Anthony. 1966. Japanese Language Patterns. Tokyo: Sophia University Press.
GRICE, M. P. 1975. "Logic and Conversation." in Syntax and Semantics 3: 41-58. Academic Press.
KARTTUNEN, L. and S. Peters. 1977. "Requiem for Presupposition." in Berkeley Linguistics Society, 3.
KUNO, S. 1973. The Structure of the Japanese Language. MIT Press.
MCGLOIN, N. H. 1976. "The Speaker's Attitude and the Conditionals to, tara, and ba." Papers in Japanese Linguistics 5: 181-191.
YASUO, Yoshida et al. 1973. Japanese for Today. Tokyo: Gakken.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

The Exceptions to Passive in English: A Pragmatic Hypothesis*

Richard D. Cureton

While evidence from language acquisition and comparative linguistics strongly suggests that the various lexical exceptions to Passive in English should be functionally (i.e., semantically/pragmatically) related, all attempts to demonstrate any functional relationship between these predicates have failed. In an attempt to redress this situation, this paper attempts to demonstrate that each predicate which is an exception to Passive in English, when used in an active sentence, fails to implicate any pragmatically significant propositions which predicate qualities of the object NP of that sentence. In conclusion, it is argued that this functional relationship can be motivated in terms of the historical development of the Passive in English from a stative adjective structure and it is suggested that these exceptions may resist levelling because of their formal similarity to these copular constructions.

I. Introduction

The purely structural formulation of the Passive transformation,

	NP	- AUX	- V	- X	- NP	- Y
SD	1	2	3	4	5	6
SC	5	2+be+en	3	4	Ø	6+by+1

while inadequate in many ways, represents an important generalization about the relation between two syntactic constructions in English. Most verbs which meet the structural description for this rule also appear in the construction represented by the structural change. Consequently, given (1a) and (2a), (1b) and (2b) exist as well.

(1) a. John hit the ball.
    b. The ball was hit by John.

(2) a. The janitor cleaned the building.
    b. The building was cleaned by the janitor.

However, for a small group of verbs, this is not true. That is, while they appear in the sentences which meet the structural description for the rule, the corresponding sentences represented by the structural change are ungrammatical. Want (meaning 'desire'); have, lack, and want (meaning 'lack'); various pseudo-passives; verbs of comparison, equality and suitability such as fit, be, suit, equal, and resemble; measure verbs such as cost, weigh, measure, hold, contain, and extend; get (meaning "come to have") verbs of judging and knowing such as believe, know, consider, and expect (in certain

pragmatic situations), in particular, do not passivize.

In the past twenty years, several attempts have been made to deal with these exceptions.

First, Lakoff(1970) claimed that these exceptions are completely idiosyncratic and cannot be related in any way. As he states (1970:19):

> "There is no independently motivated syntactic class that distinguishes these verbs from those that do not undergo Passive. It is simply an idiosyncratic fact about these verbs that they do not undergo that rule."

From this conclusion, he reasoned that an ad hoc mechanism (rule features) was needed to mark those verbs which undergo Passive as +Passive Rule and those which do not as -Passive Rule. However, as Green(1974) and Green and Morgan(1976) have pointed out, this claim makes wrong predictions with respect to known cross-linguistic and language-learning facts about Passive. As Green(1974:11-12) states:

> "...it inherently makes the false claim that these items, as exceptions, are not rule governed but are learned individually and by correction... and predicts that it will be a marvelous coincidence if a counterpart to this rule in some other language...has exceptions with meanings corresponding to the meanings of the exceptions to the rule in English. Yet the verbs meaning 'have', and 'want/desire' are transitive in English, French, and German and may not be passivized in any of these languages."

Consequently, while an ad hoc mechanism can certainly be devised to formalize the exceptions to Passive, this approach makes incorrect predictions and, in the end, merely avoids the entire issue to be explained (i.e., Why these exceptions and not others?).

In an attempt to account for these facts, Chomsky(1965) proposed that these exceptions could be handled by subcategorizing verbs into those which take manner adverbials (and, thus, undergo Passive) and those which do not (and, thus, do not passivize). As he(1965:103) states:

> "Thus, Verbs generally take Manner Adverbials freely but there are some that do not--for example: resemble, have, marry, ... fit, ...cost, and so on. The Verbs that do not take Manner Adverbials freely Lees has called 'Middle Verbs' ...and he has also observed that these are, characteristically, the Verbs with following NP's that do not undergo the passive transformation.... These observations suggest that the Manner Adverbial should have as one of its realizations a 'dummy element' signifying that the passive transformation must obligatorily apply."

The problems with this approach, however, are well-known. Statives such as know, think, believe, and so forth--are generally well-formed in Passive structures yet do not take manner adverbials freely (e.g.,*I knew that eagerly.[1] Consequently, this account fails to handle the relevant data.

Opposed to these structural accounts, Sinha(1974) argued that the discourse functions of the Passive construction as opposed to the active are important considerations in determining the appropriateness (and, therefore, grammaticality?) of these structures. Sinha argued that speakers use Passives in a discourse in order to maintain the discourse theme, insure low levels of redundancy in conjoined sentences, and omit totally predictable or unknown subjects--and that these considerations, to a large extent, determine the distribution of passive and active sentences in discourse. However, while the facts Sinha points out are true, it is hard to see how this functional analysis could be generalized to account for the lexical exceptions to Passive. Using this analysis, one would have to claim that all uses of passive constructions with have, owe, resemble, and so forth, violate one or a combination of these functional principles. That is, one would have to claim that subjects of these verbs must never be 'backgrounded', can never be 'themes', and so forth. However, intuitively, this seems to be the wrong result. Why can't something one has, owes, resembles, or wants be a 'theme' of a discourse? While the issue is certainly not closed, the burden of proof which provides answers to these questions rests with the advocates of this position.

Finally, Riddle, Sheintuch, and Ziv(1977) noted that pseudo-passives are well-formed only if the object of the preposition in the corresponding active sentence is crucial to a complete description of the activity expressed in the verb. In particular, they noted that sentences with prepositional phrase which merely indicate the time or place of the activity of the verb do not passivize while sentences in which the object of the preposition is, in some way, affected by the activity of the verb do. Consequently, sentences such as: I was rained on! are fine, but sentences such as: *The day was slept during.--are unacceptable. While, again, these observations are inciteful, the most glaring drawback of this approach is that it cannot be generalized to account for the other exceptions to Passive. As with Chomsky's account, the actions expressed by stative verbs seldom 'affect' the referent of their objects (e.g., When one knows someone's name, does this fact 'affect' that name?). Worse yet, when one looks closely at a full range of pseudo-passives (see the section on pseudo-passives below), one finds that the object of the preposition in many structures which have well-formed pseudo-passives is not so 'affected.' Consequently, this theory as well fails to account for the relevant data.

In sum, while the exceptions to Passive have been much-discussed and are, in fact, well-known, all attempts which have been made to explain these exceptions--be these explanations in terms of syntax, semantics, or pragmatics--have uniformly failed. Thus, while facts from other languages and language-learning strongly suggest that these predicates share some common characteristic what this characteristic is has until now remained an enigma.

II. The Implied Quality Predication Hypothesis

The hypothesis this paper proposes to account for the exceptions to Passive is the following:

> An active sentence has a Passive counterpart in English if and only if from the various propositions expressed by the active

sentence a listener, in the normal case, can infer another pragmatically significant proposition which predicates a quality of the object NP of that sentence.[2]

For convenience, I will refer to this hypothesis as the Implied Quality Predication Hypothesis (IQPH). The rest of the paper will be an attempt to justify its existence.

III. The IQPH and the Exceptions to Passive

In English, the verb want can be used with four major senses (illustrated in (3)-(6)):

(3) a. John wants that bike.
b. Bill wants that Jaguar.

(4) a. That soldier wants courage.
b. This painting wants originality.

(5) a. The police want Tom for murder.
b. The F.B.I. wants Bill for his involvement in the drug traffic on the East Coast.

(6) a. The president wants Bill in the Oval Office.
b. Someone wants Bill on the telephone.

The meaning of want as it is used in (3) is something like 'have a personal desire for', as it is used in (4), something like 'lack', as it is used in (5), something like 'desire to apprehend because of some involvement in a criminal action', and, as it is used in (6), something like 'desire the presence of (usually for some specific purpose)'. Of these four uses, want in (3), (5), and (6) are synchronically very common and are historical innovations while the use of want in (4) is synchronically very rare, has archaic connotations and was the historical ancestor of the uses in (3), (5), and (6).

The problem want presents for the analysis of the lexical exceptions to Passive is that of the various uses of want in (3)-(6), only the uses in (5) and (6) have corresponding Passives while the Passive counterparts of the uses in (3) and (4) are ungrammatical. These facts are illustrated in (7)-(10).

(7) a. *That bike is wanted by John.
b. *That Jaguar is wanted by Bill.

(8) a. *Courage is wanted by that soldier.
b. *Originality is wanted by this painting.

(9) a. Tom is wanted by the police for murder.
b. Bill is wanted by the F.B.I. for his involvement in the drug traffic on the East Coast.

(10) a. Bill is wanted in the Oval Office by the President.
b. Bill is wanted on the phone by somebody.

Of course, the division into the four senses outlined above is a simplification which encounters many unclear, transitional cases. This arises from the fact that these senses are closely related and vary with context. For instance, the senses of want in (5) and (6) are closely related to the sense of want in (4) and have probably arisen from the association of want meaning 'personal desire' with the particular context involved. (e.g., 'desire for someone's presence', 'desire to apprehend', etc.). Also, it is easy to see how the senses of want in (3), (5), and (6) could have arisen out of the sense of want in (4). The things which people lack they often desire, and one seldom desires to have something that one already has. In many cases, then, it is often unclear which sense of want is intended by a speaker and minor changes in context can bring about shifts in these senses (and, therefore, entail changes in the grammatical behavior of the predicate with respect to Passive). For instance, consider the following.

(11) a. *John is wanted for the job by Professor Jones.
b. ?? A good syntactician is wanted for the job by Professor Jones.
c. ? A good syntactician with a firm grasp of several syntactic paradigms, a solid knowledge of diachronic syntax and a proven skill working with doctoral candidates is wanted for the job by Professor Jones.

What is happening in the above progression is that want in the sense of 'a personal desire for' turns slowly into want in the sense of 'desire for a particular purpose" (and, as the description of the qualifications lengthens, one can infer this purpose from the description). This purpose is different from the highly conventionalized purposes reflected in sentences (5) and (6) (and, therefore, the subject NP of (11c) must give the listener a considerable amount of information from which he can infer what this purpose is) but, nonetheless, the possibility of inferring this purpose changes the behavior of want with respect to Passive.

How does the IQPH account for these facts?

As predicted by the IQPH, the use of want in the sense 'have a personal desire for' does not govern the Passive because want in this sense implicates no propositions which predicate a quality of its direct object. This seems to be because people can want anything for any reason and these reasons can be totally arbitrary. That is, they can be totally dependent on the whim of the wanter and totally independent of the qualities of the object wanted. People can want nonexistent, imaginary objects or normally useful objects for perverse, totally non-utilitarian purposes. For instance, John in sentence (3) could want the bike for any number of reasons: to get around on, to give to his little brother, to tear it down for scrap metal, and so forth. The point is: given sentence (3)a. alone, a listener, in the normal case, can reason to no pragmatically significant proposition which predicates a quality of the object of want, that bike. It appears that the use of want in the sense 'have a personal desire for' tells the listener something about the wanter but nothing about the thing wanted. And this, according to the IQPH, is the essential fact which determines whether the predicate governs Passive.

A nice confirmation of this analysis comes from the adjectival derivative *wantable . According to my intuitions, if *wantable existed, it would be pragmatically empty. Since everything is, in principle,*wantable *X is wantable. is vacuous. A Gricean principle of Quantity would (and, one could argue, has) forbid its usage. Here, one could argue that it is not the accidental fact that want does not passivize which forbids the derivation of the -able adjective, but the fact that the same pragmatic constraint which does not allow want to passivize also predicts that want would produce a pragmatically empty -able adjective. In the normal case, wants, when not confined to some conventional context, are totally arbitrary and unpredictable. Therefore, this weaker case, the fact that we can want something, also says nothing about that something.

Want in the sense 'lack' also implies no propositions which can be predicated of the object lacked. The predicates lack and its antonym have are very general relational predicates which, in themselves, deal with the predication of qualities. That is, if I have five fingers or I have originality the use of have means that being five-fingered or original are qualities of me. However, since have itself predicates its object of its subject, it implies no propositions which predicate an additional quality of that object. Taken alone, the fact that I lack originality tells one nothing about originality. It tells one something about me. That Bill lacks courage tells one something about Bill but not about the nature of courage. Consequently, as predicted by the IQPH, want in the sense 'lack', have, and lack are ungrammatical in the passive.

At this point, linguists in the past became dismayed because own passivizes but have/lack do not. Again, I believe this is unwarrented.That something is owned predicates a significant quality of the thing owned. Ownership is a socially defined, legal relationship between an owner and an object, and, as a consequence, it is of utmost importance that a person know when this relationship obtains and when it does not. Notice the difference, for instance, between:

(12) a. John has your ball.
b. John owns your ball (now).

(12)a. deals with a relation of control (i.e., John is holding the ball or has it in his house, etc.). (12)b., on the other hand, asserts that (regardless of this control relation) the ball now has a significant quality which, if the law is obeyed, defines further relationships between the ball and its respective controllers/havers. Significantly, some things by their very nature are usually not owned (e.g., one's spouse, the air, etc.), and this fact is significant. Again, using the adjective test, ownable makes some pragmatic sense but*havable or*lackable do not. Therefore, have and own differ in meaning on just the point which the IQPH predicts is crucial with respect to the behavior of a predicate in Passive constructions, and, consequently, it should be no surprise that one passivizes and the other does not.

In opposition to these cases, the IQPH predicts that want in the senses illustrated in sentences (5) and (6) will passivize because, in these cases, the context provides enough information so that the speaker can infer certain things about the qualities of the thing wanted. Somone wanted by the police

(in normal circumstances) has done something criminal or has some information bearing on a criminal act which has caused him to be wanted. Similarly, someone wanted on the phone or in an office is usually wanted for a certain (inferrable) purpose. In these cases, the context of the desire by the wanter has been conventionally built into the meaning of the predicate so that the implication which is crucial to the operation of Passive can obtain. Police, on the whole, do not want people for totally arbitrary reasons. The nature of the relation between the police and the people they want is a fairly constant function which allows a listener to infer something, with considerable accuracy, about the person wanted. As the IQPH predicts, it seems to be just this inference which is crucial to the operation of Passive.

Finally, cases such as those illustrated in (11)c. follow as a subset of situations where want has acquired a meaning which is tailored to a particular context. As the purpose for wanting someone for the job in (11) is made more explicit, listeners can begin to infer a great deal about the person wanted. As with the wanted criminal, then, the fact that the applicant must have all these qualities, in the end, implicates beyond the mere enumeration of these qualities. Thus, according to the IQPH, these sentences passivize.

With regard to all of these facts, then, the IQPH makes accurate predictions. To my knowledge, no comparable analysis has been proposed which can handle these facts with anything close to this degree of success.

Pseudo-passives also present interesting problems for the analysis of the exceptions to Passive. Pseudo-passivization in English derives a structure such as (13)b. from one like (13)a.:

(13) a. Napoleon slept in this bed.
b. This bed was slept in by Napoleon.

However, as has been pointed out many times, not all prepositional phrases can undergo this process. For instance, while (14)-(16)a. have pseudo-passive counterparts ((14)-(16)b.), the pseudo-passivized counterparts of (17)-(19)a. (e.g., (17)-(19)b.) are ungrammatical.

(14) a. Someone has eaten off of this plate.
b. This plate has been eaten off of by someone.

(15) a. One can march through this valley in two hours.
b. This valley can be marched through in two hours.

(16) a. Many famous dignitaries have lived in this house.
b. This house has been lived in by many famous dignitaries.

(17) a. John arrived at 6 o'clock.
b.*6 o'clock was arrived at by John.

(18) a. They went with Bill to Chicago.
b.*Bill was gone with to Chicago by them.

(19) a. Ann has lived in the U.S.
b. *The U.S. has been lived in by Ann.

In a recent discussion of pseudo-passives, Riddle, Sheintuch and Ziv(1977) noticed the following:

(a) Pseudo-passivization cannot be constrained in terms of which prepositions undergo the rule. As the sentences in (16) and (19) indicate, constraints on pseudo-passivization cut across lexical items.

(b) If the prepositional phrase merely indicates the location, time, or direction in which the activity of the verb takes place, the pseudo-passive is ungrammatical.

(c) If the object of the preposition can be seen as receiving the action of the verb so that, in the process, its referent becomes changed in some way (materially, psychologically, or otherwise), then the pseudo-passive is well-formed.

While these generalizations come a long way toward adequately constraining pseudo-passivization, I would like to claim that it is not the principles in (b) and (c) above which explain the distribution of grammaticality in (14)-(19), but the IQPH. As opposed to (c), I would claim that the pseudo-passive construction is well-formed only if its active counterpart implicates some additional proposition which predicates a quality of the object of the preposition in the active structure.

How can one decide between these two positions?

It is easy to show that principles such as (b) and (c) are inadequate as mechanisms to constrain pseudo-passivization. For instance, in sentences such as (15), the referent of the valley is not changed nor, in fact, does it receive the action of the verb any more than 6 o'clock, Bill, or the U.S. in sentences (17)-(19). The difference between the two cases, however, is that (15)a. implicates important propositions which predicate qualities of the valley (e.g., it is not very wide; it has easily "marchable" terrain; it is passable; etc.). (17)-(19)a., however, implicate very little which can be predicated of 6 o'clock, Bill and U.S, respectively. That John arrived at a certain time tells one nothing about that time. Similarly, that some people went with Bill tells us nothing about Bill and that Ann lives in the U.S. tells us very little about the U.S. In cases such as these, the IQPH makes the right predictions. The principles in (b) and (c) do not.

Another good example to illustrate this point is (20):

(20) a. A good portion of the animal kingdom sleeps through the winter.
b. The winter is slept through by a good portion of the animal kingdom.

Of this example, Riddle, Sheintuch and Ziv(1977:152) state:

"Here again the winter does not designate the time when the sleeping

activity takes place. The winter is crucial to the activity in that it designates "the assets" that were used up in the activity."

The problem with this analysis is that, while sentences such as (20)b. are well-formed, if the subject is changed, as in (21):

(21) a. The bear slept through the winter.
b.*The winter was slept through by the bear.

the pseudo-passive (i.e., (21)b.) becomes unacceptable. Yet, all of the arguments given for the grammaticality of (20)b. still hold. The winter is still an "asset" which is being used up; it does not merely designate when the sleeping took place.

The difference between (20) and (21) is predicted by the IQPH, however. That an isolated bear slept through the winter tells one very little about the winter. The bear could have had a bad case of sleeping sickness (or could have just been a very sleepy bear). However, that a good portion of the animal kingdom sleeps through the winter implies many significant things about the winter. The animal kingdom (by some freak) does not come down with sleeping sickness every winter. The sleeping of the animals is directly related to the qualities of winter: the cold, the scarcity of food, the snow cover, etc. Again, then, the IQPH makes the right predictions as opposed to principles (b) and (c).

While (b) and (c) (as demonstrated) are not exactly right, it is easy (in the light of the IQPH) to see why, in most cases, they make the right predictions. In general, that an event happens at a certain time or place implicates nothing about that time or place. Similarly, if an object receives and is affected by an action, this usually implies changes in the qualities of the object (and, thus, propositions describing these changes can be predicated of the object). However, as illustrated in (20) and (21), this is not always so. An action can implicate important propositions about a time (e.g., (20)), and an action can implicate propositions which predicate qualities of its object without that action having "affected" it.(e.g., (15)). In these cases, contrary to (b) and (c) but following from the IQPH, the pseudo-passives are well-formed.

Another group of verbs which only passivize under certain pragmatic conditions are verbs of judging and knowing such as think, believe, consider, know, understand, expect, regard, and so forth. Thus, while all of the various versions of (22)-(26)a. are grammatical, the sentences in (22)-(26)b. are odd unless the subject of the (passive) sentence (and, consequently, the object of the active sentence) refers to a large group of people (such as everyone, most people, many people, everyone I know, etc.) or a person or select group of people who are judged to be experts on the issue.

(22) a. John / My mother / Most people / The leading authorities on boxing / Everyone think(s) that Ali is the greatest fighter of all time.

??John
??my mother
b. Ali is thought by most people to be
the leading authorities on boxing
everyone

the greatest fighter of all time.

Tom
My father
(23) a. Most men on the street consider(s) Jimmy Carter to be
Many political experts

the greatest thing that ever happened to the Presidency.

??Tom
??my father
b. Jimmy Carter is considered by most men on the street to be
many political experts

the greatest thing that ever happened to the Presidency.

Tom
My mother
(24) a. Most people in the English Department knew Bill.

??Tom
b. Bill was known by most of the people in the English Department.
??my mother.

Bill
My mother
(25) a. Everyone I know expect(s) George to win the election hands
Many experts

down.

??Bill
??my mother
b. George is expected by everyone I know to win the election
many experts

hands down.

Tom
My mother
(26) a. Most of the people understood the problem.
Everyone

??Tom
??my mother
b. The problem was understood by most of the people
everyone.

How are these facts connected with the other exceptions to Passive.

As with the other exceptions to Passive, the distribution of grammaticality in sentences (22)-(26) follows from the IQPH. In matters of judgement, acquaintance, and comprehension, the pronouncement of one person can be totally arbitrary/subjective. As with want, simply from the fact that someone thinks X or believes X or expects X, one cannot infer anything definite about the qualities of that X. While what one can know or think has some bounds (unthinkable and unknowable are not pragmatically empty), one can certainly think things which have no connection with reality or with any demonstrably existing qualities of the object/state of affairs one has an opinion about. However, in most cases the more people who think X or believe X, the more one tends to infer that the thing thought or believed is, in fact, true. Consequently, Everyone expects George to win the election hands down, in the normal case, tells one something about the actuality of the claim George will win the election, but Bill expects George to win the election hands down does not. Consequently, following the IQPH, the former sentence passivizes; the latter does not.

Of course, what can be objectively inferred from the subjective judgement/knowledge/acquaintance of one person is, to a large degree, dependent on the speaker-listener's confidence in the validity of that person's judgement/knowledge. In general, (as illustrated in (22)-(26)), judgements by people who have access to more or more reliable information on an issue (e.g., authorities on the issue) will tend to be more acceptable in the passive. Thus, *Bill is expected by my friends to win the election hands down is odd, but, if one substitutes many political analysts for my friends, the oddness vanishes.

This situation is far from simple, however. Complications arise because anti-authorities (i.e., those whose judgements always tend to be mistaken) also implicate propositions which predicate qualities of the objects of their judgements. Thus, for me, sentences such as: Jimmy Carter is thought by some idiot to be the greatest thing that ever happened to the Presidency are fairly good.

As with the other exceptions to Passive, however, when the active sentence implies nothing which predicates qualities of its object, the passive construction is unacceptable. This is exactly what the IQPH predicts.

While the IQPH can be applied most naturally to the predicates already discussed, the remaining exceptions to Passive: measure verbs (such as weigh, cost, measure, etc.), verbs of equality and comparison (such as equal, be, resemble, etc.), get meaning "come to have", can be motivated, at least in part, by their failure to implicate qualities which can be predicated of their objects. In these cases, these verbs, in themselves, predicate their objects of their subjects and, therefore (like have and lack) tend to implicate little about those objects themselves.

(27) a. Bill got a hernia.
b.*A hernia was gotten by Bill.

(28) a. Two plus two equals four.
b.*Four is equalled by two plus two.

(29) a. The bag weighed twenty pounds.
b.*Twenty pounds was weighed by the bag.

(30) a. Tom resembles an elephant.
b.*An elephant is resembled by Tom.

For instance, in (27), Bill comes to have a hernia, but this, in itself, says little about the qualities of a hernia. Similarly, that the bag in (29) has a certain measurable weight implicates little about that weight itself. As in the other exceptions to Passive, the relationship between a bag and its weight is arbitrary (i.e., it depends on the bag). (29)a. describes qualities of the bag--not the weight. Therefore, by the IQPH, these sentences do not passivize.

Some evidence for this analysis comes from the fact that when these predicates are used in situations where they do not merely predicate their objects of their subjects, they tend to passivize. For instance, notice the difference between the sense of get in (27) and the get in (31) (which means something like "obtain by effort").

(31) a. My men will get the money by hook or crook.
b. The money will be gotten by my men by hook or crook.

In a sentence such as (31)a., one can infer a great deal about the money (e.g., It is not readily available; it is hard to get, etc.). Therefore, by the IQPH, this sentence passivizes. Similarly, equal in sentences such as (32):

(32) a. Only a few composers have equalled Bach's command of counterpoint.
b. Bach's command of counterpoint has been equalled by only a few composers.

is directional. The person/thing to be equalled is set up as a standard (either good or bad) which others strive to match or avoid. From sentences such as (32)a., as a result, one can infer something about Bach's command of counterpoint (e.g., it is a standard; it is highly developed; it represents the art of a musical genius, etc.). Here, the directionality of the equalling process tells one something about Bach's art. Therefore, as predicted by the IQPH, (32)a. passivizes.

IV. The IQPH: Sources and Motivation

Given that the IQPH is a powerful mechanism which, in a large number of cases, can accurately predict which sentences have Passive counterparts and which do not, the deeper question now becomes: Why the IQPH and not some other constraint? What historical or synchronic motivation can be given for the nature of this constraint on Passives in English?

Historically, the Passive construction in English developed from a reinterpreted stative adjective construction. Thus, from a sentence such as: The dress was torn meaning "The dress had a tear", speakers began using

sentences such as: The dress was torn by Bill meaning "Bill tore the dress." Originally, of course, these constructions could be distinguished by inflectional endings--the stative construction showing adjective agreement between the past participle and the subject of the sentence and the passive structure lacking that agreement. When the Old English inflectional endings decayed, however, these constructions fell together to yield the modern ambiguous constructions such as: The dress was torn. With regard to historical sources, then, the synchronic Passive transformation relates two very different constructions: an adjective construction and a transitive construction.

How can these facts be related to the IQPH and the problems of the lexical exceptions to Passive?

In terms of historical origins, the facts concerning the lexical government of Passive imply that in English, certain verbs used in certain pragmatic situations in a transitive structure could not occur in the corresponding adjective construction. Consequently, if the IQPH could be related to an independently motivated constraint on stative adjective constructions, one could give a nice historical account for the lexical government involved. At this point, I would like to suggest that the IQPH can, in fact, be directly related to these historical facts.

In many cases in a copular adjective construction, the adjective denotes a quality which is predicated directly of the subject NP. For instance, in The house is big/red, one predicates the qualities of redness/bigness of the house. However, many adjective constructions are more indirect. In sentences such as: Tom is amusing/irritating/exciting, the adjective refers to the reactions of others to Tom. However, from these reactions, speakers can easily infer things about Tom (e.g., He tells good jokes or he acts obnoxiously, etc. Thus, adjective constructions often do not directly predicate qualities of the subject but, in these cases, one can (from the predication given) still infer things about the qualities of the subject.

The relevant question with regard to the relation between the IQPH and th constructions is: What would it be like to have an adjective construction from which one could infer nothing about the qualities of the subject? Historically, in the passive version of an active sentence, the object of the active verb becomes the subject of a reinterpreted adjective construction in which a deverbal adjective derived from the active verb is predicated of that former object. With respect to the lexical exceptions to Passive, this yields adjective constructions of the form:

(33) a.*The ball was had.
b.*The bike was wanted.
c.*Courage was lacked.
d.*Two o'clock was arrived at.

and so forth. However, as was outlined in great detail above, in many contexts the predicates from which these adjectives are derived implicate no propositions which predicate qualities of their objects. Consequently, as adjective constructions, sentences such as (33)a.-d. are pragmatically empty. If everyth is, in some sense, had, that a ball is had says nothing about the ball; if everything, in principle, is wantable, then, that the bike is wanted says nothing about the bike. And so forth.

It is my claim here that the IQPH directly reflects this crucial pragmatic constraint on the well-formedness of adjective constructions. Given that sentences such as those in (33) never occur, then constructions such as these could never be available to feed the historical change which involved the reinterpretation of stative adjective constructions to passive transitive constructions. As a result, the analysis of the exceptions to Passive in terms of the IQPH has a strong historical motivation.

V. The IQPH: Implications

If, in fact, the IQPH is the correct constraint on Passives in English, the following important results naturally follow:

(a) Given that Passive is constrained as it is in English because of the historical origins of the construction as a periphrastic Passive modelled on a stative adjective construction, one would predict that a constraint similar to the IQPH would only occur cross-linguistically where a language also developed a Passive from an adjective construction. The fact that many languages which have synthetic Passives are much freer in allowing Passives of intransitives or transitives which are forbidden in English (e.g., Sanskrit) while languages with periphrastic Passives tend to have constraints similar to the IQPH (e.g., French, German), thus, follows as a natural result.

(b) If it is true that children do not learn the exceptions to Passive by error and correction but by generalization from some minimal amount of feedback, then one must claim that children learn a synchronic version of this basically historical constraint at some early point in language learning. However, if this is so, the question arises: How is this done? Given that the IQPH is basically motivated on historical evidence, why do children maintain these exceptions so consistently without levelling them at some early period? While much more investigation of these questions is needed, it could be suggested that interference between ill-formed sentences such as those in (33) and their passive counterparts lead to the maintenance of the IQPH in languages with periphrastic Passives. That is, even though a sentence with Passive sense such as: The bike is wanted by Bill is well-formed transformationally, as an adjective structure, it is unacceptable, and therefore, speakers tend to avoid these passives. According to this theory, then, the reas the historical origins of the Passive constructions are still relevant synchronically is that the periphrastic nature of the synchronic passive leads to transderivational conflicts which speakers attempt to avoid. While these speculations may be premature at this point, they may be suggestive of possible ways the IQPH could be integrated into a synchronic theory of English syntax.

NOTES

*I would like to thank Rich Halpern and Alice Davison for their comments on earlier versions of this paper.

[1]Of course, depending on one's biases, one could still claim that this account, even if true, would remain superficial. Given Chomsky's formulation, one could still ask: What is the connection between manner adverbs and Passives? Why do these constructions have a parallel distribution? Robin Lakoff(1971: 150-151), for instance, takes this stand. She states:

> "So Chomsky's argument on the basis of similar distribution of Adv_{man} and passivization does not hold water. And, in fact, there is no reason why it should: what could a manner adverb have to do with passivization? The two phenomenea are unrelated semantically. This sort of treatment is an illustration of the pitfalls into which one can descend if one attempts to relate structures purely on the basis of superficial similarities of distribution, not taking semantic parallelism and similarities of usage into account."

[2]By a "quality" of the object, I mean an aspect of its inherent nature (e.g., its physical structure or behavior) rather than simply its relation to other things .

REFERENCES

CHOMSKY, Noam. 1965. Aspects of the theory of syntax. Cambridge, MA: MIT Press.

GREEN, Georgia. 1974. Semantics and syntactic regularity. Bloomington, IN: Indiana University Press.

LAKOFF, George. 1970. Irregularity in syntax. New York: Holt, Rinehart, and Winston, Inc.

LAKOFF, Robin. 1971. Passive resistance. Papers from the 7th CLS meeting, 149-163. Chicago: University of Chicago Department of Linguistics.

MORGAN, J.L. and G. Green. 1976. Notes towards an understanding of rule governme Studies in the Linguistic Sciences 6:1.228-248.

RIDDLE, E., G. Sheintuch, and Y. Ziv. 1977. Pseudo-Passivization:on the role of pragmatics in determining rule unity. Studies in the Linguistic Sciences 7:2.147-156.

SINHA, Anjani K. 1974. How passive are passives? Papers from the 10th CLS meeting, 631-643. Chicago: University of Chicago Department of Linguistics.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

CONTEXTUAL EFFECTS ON "GENERIC" INDEFINITES: CROSS-LINGUISTIC ARGUMENTS FOR PRAGMATIC FACTORS

Alice Davison

Indefinite reference covers a range of uses and meanings, from generic positive sentences to null reference. French and English divide up this range of uses differently into lexical items, so that indefinite determiners and pronouns in the two languages do not exactly correspond. Generic sentences, however, are subject to the same pragmatic conditions on the absence of specific time reference in tenses and modals. The lexical divisions in French suggest that the uses of any do not necessarily constitute a unified phenomenon. These facts have implications for the semantic description of English any.

This paper is a study of indefinite pronouns (and related articles) in French and English. It focuses on the relation between the indefinites with generic or approximately universal reference, such as E. any (at all, whatsoever) and Fr. n'importe qu-, quiconque, and other indefinites, positive E. some, Fr. quelque, or negative, E. nobody, nothing, Fr. personne, rien. The contextual features referred to in the title are both grammatical and pragmatic. The pragmatic factors have to do with the context of utterance and the speaker's intended reference insofar as that can be determined from the context of utterance. The grammatical factors include features of the sentence in which the indefinite is used, and include information about word order (relative to negation, for example), case relations, whether the indefinite occurs in a single clause or biclausal construction, whether the clause in which it occurs is a conditional clause, a yes/no question, etc. These factors all have some influence on the choice of indefinite lexical item out of those available in the language and in the assignment of an indefinite interpretation--e.g. generic, specific or non-specific.

Indefinite reference is inherently difficult to categorize into different sub-types, in contrast to concrete objects, for example, which can be taxonomized in accordance with objectively definable features. Indefinites could, however, be arranged on a scale in the manner of Horn (1972) for the range of quantitifiers, modals, etc. The factor determining the position of each lexical item on the scale of indefiniteness would be the degree to which the word picks out referents from the universe of discourse. Negative indefinites, which pick out no referent, would be at one extreme, while generics, which pick out indiscriminately referents of a given sub-class, would be at the other. In between would be non-specific indefinites which pick out a referent without further identification, and specific indefinites, for which further identification could be supplied. I do not mean to imply by this description of a scale that these divisions are necessary to a language, or that the categories are always discrete. In fact, it is striking that languages differ on

just this point, that some have more lexical distinctions than others, and some languages assign one lexical item to different points on the scale. French and English differ in both of these ways, as I will demonstrate in the body of the paper.

Indefinite pronouns are often problematic; English any has been the subject of much controversy over whether it is ambiguous, encoding two distinct semantic units, and if it is not ambiguous, how is one sense derived from the other. Even if one looks at the class of indefinite pronouns as contrasting units in a system, as Gougenheim (1939) does, it is not always sufficient to describe the contrasts. There are restrictions on the use of a lexical item which do not become apparent in such an analysis, and just specifying the system of contrasts does not always specify the full range of meaning which an indefinite lexical item may have.

Assuming that the grammatical and pragmatic factors which are relevant to indefinites can be identified across languages--and it is easy to identify questions, conditionals, negation and modals--a cross-linguistic comparison of indefinite pronouns is useful in bringing out covert relations or those which are very hard to define within the confines of a single linguistic system. I will propose that pragmatic factors have a greater influence in the use of indefinites in French than it might appear at first, while the lexical divisions in French are helpful in defining natural semantic divisions along the scale mentioned earlier. These have some implications for analyses of items like English any which seem to cut across these divisions.

Tense/aspect and modal restrictions on generic indefinites

Corresponding to the 'generic' use of any- in English are several French expressions, n'importe qui, quoi, quand, où 'anybody, anything, any time, anywhere' and quiconque 'anyone, whosoever'. The latter is used with a headless relative clause construction, with the restriction that quiconque must be the grammatical subject in the higher clause; but it may also be used in single clause sentences (Grevisse 1953:445-6). Concerning the other indefinites, Wagner et Pinchon (1973:209) contend that they do not require any special remarks. That the indefinites do have contextual restrictions for generic readings becomes apparent when one tries to define the conditions under which English any is well-formed with the generic meaning. These contexts include certain tenses and modals:

(1) a. Anybody can do that. b. N'importe qui peut faire cel

(2) a. He talks to anybody. b. Il parle à n'importe qui.

(3) a. Anybody will tell you the same thing. b. N'importe qui vous dira la même chose.

(4) a. Anybody could have read the paper.
b. Il glissa le papier plié sous la porte. N'importe qui risquait de le lire.
'He slipped the folded paper under the door. Anybody could have read it.'
(Gougenheim 1939:170)

(5) a. Anybody has to/?must pay income taxes.
b. N'importe qui doit payer les impôts.
c. ?Quiconque doit payer les impôts.

Any as well as n'importe qui are well-formed with the generic present (as one might expect), the imperfect and modals of ability, the future tense or modal, and modals or verbs of obligation, with the exceptions to be noted later.

In contrast, other tenses such as the present progressive, past and perfect produce ill-formed combinations:

(6) a. *Anybody is reading my letters.
b. *N'importe qui est en train de lire mes lettres.

(7) a. *Anybody has talked to him.
b. *N'importe qui lui a parlé.
c. *Anybody talked to him.

(8) a. Anybody knows the answer to that question.
b. *Anybody knew the answer to that question.

(9) (The car is too full.) *Anybody must get out.

The present progressive and the present perfect in both French and English are unacceptable in combination with a generic indefinite. In English, the simple past is also unacceptable, corresponding to the passé composé in French when it has just the value of a past tense (7), (8). I have proposed elsewhere (Davison, to appear) that the difference between the acceptable combinations (1) - (5) and the unacceptable combinations exemplified in (6) - (9) is to be found in the deictic properties of tenses and modals. That is, the tenses and modals used in (6) - (9) refer to single, specific events which have actually occurred (past) or are in process (present progressive). The model must singles out a specific individual in situations like the one described in (9), where contextual information indicates that a single event is involved. This contrasts with (5) a. and b., where the modal or verb indicating necessity does not pick out a specific event of paying taxes, and hence a specific individual.

Contextual information may override purely grammatical information, for example when the present tense is used to describe past events. The present tense is otherwise taken to be generic, without specific reference to a single event. For example:

(10) a. I'm standing on the corner, waiting for the bus yesterday, and I talk to *anybody/somebody about the weather.

b. Voici ce qui m'est arrivé hier soir. Il est onze heures, je suis dans mon lit, et *n'importe qui entre par la porte.
'Here's what happened to me last night. It's 11 o'clock, I'm in bed and *anybody comes in by the door.'

What is ill-formed within the contexts specified in (10) is otherwise well-formed all other things being equal:

(11) a. I talk to anybody about the weather.
b. N'importe qui entre par la porte.

The sentences in (11) are taken to be descriptions of generic states of affairs, and hence involve no specific individuals. The reference of anybody or n'importe qui is thus indefinite and non-specific, ranging over a class of events.

The above sentences show that for both French and English, it must be stipulated that generic indefinites not only have indefinite reference, but must also be used in grammatical or utterance contexts without specific event or state reference. Definition of indefinite generic reference alone is not sufficient in itself. For example, Gougenheim (1939:170) defines the meaning of the pronouns formed with n'importe qu- in the following terms:[1] '(they) indicate indifference as to the entity (or group of entities) referred to, since the pronoun does not represent any substantive.' This definition rules out antecedent Noun Phrases, which would make the pronoun definite and specific. But 'indifference' in itself does not suggest that tense, aspect and modals might be involved. For instance, one might refer to individuals involved in a specific event 'indifferently', as 'someone or other', which would be the normal term for a speaker to use in (10) a. A description of the reference of the pronouns alone leaves out of the account the fact that there are contextual restrictions. Of course, the properties of the context match the non-specific property of the pronouns, unsurprisingly. In fact, it may be possible to say that for English any, the generic meaning is just a combination of non-specificity of any and whatever class of events is defined by tense, aspect and modal information.

Conditional clauses, yes-no questions and negation

We have seen in the previous section that the French indefinite n'importe qu- has the same set of pragmatic and grammatical restrictions on its use as the generic sense of English any. We might then ask if n'importe qui and quiconque have any other features in common with any. Any occurs with more or less an existential interpretation in conditional clauses and yes-no questions:

(12) If anybody$_i$ comes looking for me, tell them$_i$ I have left.

(13) Did anybody come?

Since the proposition contained in a conditional clause or a yes-no question is neither asserted nor presupposed to be true, there is no reference to an actual and specific event, and therefore no reference to a specific individual. It seems plausible that in English, the same non-specific generic pronoun is used to indicate a non-specific individual in a state of affairs which either might not be the case--as in questions--or might be true in any number of actual events--in conditional sentences.

But in French, questions and conditionals do not allow generic indefinites, even where it might be plausible for them to occur by the 'indifference' criterion. For example, (14) and (15) are the counterparts of (12) and (13):

(14) a. Si { quelqu'un / une personne / *quiconque / *n'importe qui } vient me chercher, dis-lui que je suis partie.
b.
c.
d.

(15) a. Est-ce que { quelqu'un / *quiconque / *n'importe qui } est venu aujourd'hui
b.
c.

In the case of (15), quelqu'un might be heavily stressed, in the sense of 'anybody at all'. Suppose a speaker asks a series of questions, mentioning a specific person each time, each time getting a negative answer. Finally the person asks if anybody at all came, not caring who. In the French version of the sentence, quelqu'un is the only pronoun possible, and none of the generics will be possible, especially because of the past tense reference of the passé composé.

In English, another environment of any in a clearly existential use is in the scope of negation, expressed or implied by context or lexical items.[3] There is equivalence between not . . . any and no, and contrast with not . . . some:

(16) a. I didn't see anybody.
b. I saw nobody.
c. I didn't see somebody.
d. There is somebody who I didn't see.

(16) a. and b. are synonymous, and differ in meaning from the synonymous pair (16) c. and d. Furthermore, any which precedes negation is anomalous.

(17) a. *Anybody didn't get there in time.
b. Nobody got there in time.
c. Not everybody got there in time.

(17) a. is more or less uninterpretable, meaning neither (17) b. nor (17) c.

There are, however, some counterparts of (17)a. in French, which are well-formed:

(18) Eh bien! non, n'importe qui ne pouvait pas manier une pelle ni expédier son mètre cube sur le quai dans le temps requis.

'Well, no, not just anybody could have handled a shovel nor gotten his cubic mitre onto the quai in the required time.'

(H. Bazin, La mort du petit cheval, quoted in Gaatone (1971:73))

(19) Le collège où n'était pas admis quiconque était dirigé par des prêtres.

(Grevisse 1953:446)

'The school where not just anybody was admitted was run by priests.'

In these two cases, the indefinite is subject, though in (19) it follows the negative. What is negated is the genericness of n'importe qui and quiconque rather than existence. In fact one might say that non-specificness is also negated, so that only certain persons, whom we could specify, could perform the physical tasks of (18) or get into the school of (19).

In other negative contexts, quiconque has the value of emphatic personne 'nobody at all'.

(20) Défense absolue de parler à quiconque. 'Absolutely forbidden to talk to anybody'.

(Grevisse, ibid)

(21) Il est impossible à quiconque de se procurer quoi que ce soit touchant cet ouvrage.

(Ibid)

'It is impossible for anybody to get any information whatever concerning this work.'

Since these are generic sentences as well as ones containing some form of negation, it might be claimed that negation is incidental. But (22) shows that (implied) negation is the environment allowing quiconque:

(22) Il enferma, sans en faire part à quiconque, ce cahier.
(Ibid)
'He hid this notebook, without telling anyone about it'.

Just as in English, sans 'without' counts as a negative environment.

Another context where generics, negatives and even universal expressions may all occur is in comparatives:

(23) a. Tu sais mieux que { personne / n'importe qui / quiconque / tout le monde } que ....

'You know as well as anybody/*nobody/*everybody that ...'

Unlike English, French allows more than the non-specific indefinites in this context, though there are small contrasts of nuances of meaning.

Implications for the representation of generic indefinites

The uses of English any are often represented as involving differences of the scope of any (as a quantifier) and another logical operator such as negation, if or a modal. The existence of ambiguous sentences such as (24) and (25) lend some plausibility to this class of analysis:

(24) a. Can anybody do this?
b. If so, tell me who.
c. If so, why should we pay someone to do it?

(25) a. If Clyde does not do any of these jobs, let me know.
b. If he does none, let me know.
c. If there are some he does not do, let me know.

Of course, for the reasons indicated above, French cannot have ambiguous sentences like these. The French counterpart of (25) is two sentences, not one, each one unambiguously expressing the meanings paraphrased in (25) b. and (25) c.

(26) a. Si Jean ne fait rien de tout cela, avertissez-moi.
'If John does none of these jobs, let me know.'

b. Si Jean ne fait pas certains de ces travaux, avertissez-moi.
'If John does not do certain jobs, let me know.'

Generic indefinites and other indefinites overlap--occur in contrast at least in emphasis--only in negative or implicated negative contexts. The comparative cases and sans are examples of these, as in examples (22) and (23). N'importe qu- cannot have the same ambiguity as any does because of the fact that any can occur in the scope of negation or of if; quiconque in (19) has a different reading 'not just anybody' from the same pronoun in (20) and (21) 'no one', because in (19) the negative has the full form ne...pas which would not be used with personne. The same pattern of negation is found in (26) a, ne...rien and (26) b, ne...pas certains.

In French, there is no single lexical item (or pair of homophones) like English any, which may occur in the same environments with different interpretations. Certainly there are no parallels in French to the uses of any in questions and conditional clauses. If there are any similarities of usage, they involve the counterpart of the some-any contrast, between quelque and the negative indefinites rien, personne, etc.

(27) a. Y a-t-il rien de si ridicule?
(Grevisse: 442)
'Is there anything so ridiculous?

b. Y a-t-il personne d'assez hardi?
(Ibid)
'Is there anyone/no one so bold?

(28) a. Je vous rends responsable si rien s'ébruite dans la presse
(Ibid)
'I hold you responsible if anything gets into the papers'.

b. Il s'est joué le ses ministres, les a pris, renoyés, repris, renvoyés de nouveau, apres les avoir compromis, si rien aujourd'hui compromet.
'He played cat and mouse with his ministers, took them on, dismissed them, took them back, dismissed them again after having compromised them, if anything today is compromising'.
Chateaubriand, cited in Gougenheim, 1938: 168.

In these examples, personne and rien, usually 'no one' and 'nothing', have the sense of 'someone/thing, any at all'. The negative indefinites in these uses contrast with quelque 'some' in that quelque can be used to refer to specific and existent entities, while personne, etc., refer to non-specific, probably non-existent entities, and for this reason occur in irrealis contexts, rhetorical questions and non-factual conditionals.

English any has been analyzed as being the expression of a universal quantifier with widest scope (Reichenbach 1947, Quine 1960, Savin 1970, Horn 1972 and LeGrand 1974). This description of scope cannot be taken literally even for English; the underlying representation of the meanings paraphrased in (25) b. and c. require that IF have wider scope than V in one case:

(29) a. IF (Vx (NOT (DO Clyde,x)) THEN ...
(If Clyde does none of these jobs... =(25)b.)

b. (Vx) (IF (NOT (DO Clyde x))THEN ...)
(If there are any jobs which Clyde does not do, ... =(25)c.)

Furthermore, the indefinite generic sense can be negated in French, as was shown by examples (18), (19) and by (30):

(30) Je ne pense pas que l'on doive rien admirer.
'I don't think that one should admire just anything'
(Gaatone 1971:168)

According to Gaatone, rien has the value here of quelque chose, quoi que ce soit, 'something, whatever it may be'. Negation has this indefinite in its scope.

Of course, we would expect languages to differ in some respects, particularly in how meanings (insofar as we can compare them) are assigned to lexical items. So it is not surprising that English any and French indefinites do not match precisely in meaning or contextual conditions. But it is interesting to see how indefinites differ in two languages, so as to define natural groupings of meanings and contexts. On the whole, French has fairly clear and invariant lexical distinctions, compared with English any. There has been a great deal of controversy over whether all the uses of any are uses of one and the same lexical items, and if so, what the underlying semantic value of any is. If not, then there are two homophonous items any which occur in distinct environments. For example, the ambiguity of (24) a. would be represented as any_1 in the meaning paraphrased as (24) b., 'some', whose occurrence is allowed by if or question, versus any_2 whose meaning is 'all' and whose occurrence is allowed by the modal can.

If any is really two indefinite lexical items, we might wonder whether the lexical division occurs in the same contexts where French n'importe qu- and quiconque differ from quelque, certain and personne, rien, etc. As we have seen, indefinites do not overlap in questions and conditionals in French (14), (15), and (26), though they do in English (24) and (25). Further, negative indefinites and generic indefinites do overlap in negative contexts in French (20)-(23), (27)-(29), though they do not in English (23). The French lexical divisions do not provide any natural model for the supposed divisions of meaning associated with English any; and as Horn (1972) and LeGrand (1974) have shown, there are some indications that both uses of any behave alike with respect to some adverbial modifiers.

If any is a single lexical item, then one must establish what it is, whether it is a reflex of the universal quantifier or something else. Most analyses of any as a universal quantifier have traded on the fact that there are logical equivalences between expressions with the universal taking wide scope with respect to negation, implication or other operator, and existential expressions with the existential quantifier inside the scope of these operators. For example:

(31) a. $\forall x$ (NOT Fx) = b. NOT($\exists x$ (Fx))
b. $\forall x$ (F x$\supset$a) = c. $\exists x$ (F x)) $\supset$ a

Because of these equivalences, it is possible to capture the 'existential' sense of English any with a semantic representation containing a wide scope universal quantifier (31) a. and c., for example. Some support is lent to the analysis by the fact that any occurs in generic sentences with more or less universal quantification (cf. Vendler 1967) and also in questions, conditionals and relative clauses which resemble conditional sentences in some ways, and in the scope of negation. Yet

the data from French show that this range of occurrence is not inevitable. The French generic indefinit have no affinity whatsoever for questions and conditionals, and for negative contexts, only with emphatic value. Indefinite relative clause constructions have certain syntactic peculiarities, which I will discuss shortly, and therefore do not resemble conditional clauses as closely as in English.

Aside from these problems, the relative clause constructions which do occur with indefinite generic meaning actually do not contain definite NPs, suggesting that there is no underlying universal quantifier. Note the differences between (33) and (34), which one might not expect on the basis of the apparent similarity between (32) a, b and c, d.

(32) a. Take any book by this author.
b. Talk to anybody.
c. Prenez n'importe quel livre de det auteur.
d. Parlez à n'importe qui.

(33) a. Take any book that you would like.
b. Invite anybody who you would like.

(34) a. Prenz le(s) livre(s) /*n'importe quel(s) livre(s)/ que vous voulez.
b. Invitez la personne /*n'importe qui/ que vous voulez.

While imperative sentences may have generic indefinite pronouns in French, as in English, these indefinite pronouns may not be qualified by a relative clause of the usual type. Instead, quiconque requires a headless relative construction, while n'importe qu- requires a non-tensed reduced phrase:

(35) a. Quiconque (*qui) sera voleur sera puni. 'Anyone who steals will be punished'.
b. *N'importe qui qui lui a parlé l'a détesté. 'Anyone who spoke to him hated him'.
c. N'importe qui lui ayant parlé l'a détesté.

Quiconque generic sentences are subject to the same tense and time reference conditions as quiconque in single clauses (1)-(11). Any in English becomes exempt from such conditions if qualified by a relative clause.

(36) a. *Anybody detested him.
b. Anybody who spoke to him detested him.

(37) a. *Quiconque lui a parlé.
'Anybody spoke to him'.
b. ??Quiconque lui a parlé l'a détesté.

(38) a. ??Quiconque a fait cela a été puni.
'Whoever did that was punished.
b. ..ne pouvait être qu'un maniaque.
..could only have been a maniac.

(39) Au moyen age, quiconque faisait cela/dansait dans les rues/était puni.
'In the middle ages, anyone who did that/danced in the streets/ was punished.

(39) contains the imperfect tense which may describe a generic class of events while (38) contains the perfect passé composé (used for past time) which refers to a single event. To express such specific time reference, describing specific events, it is necessary to use an explicit universal quantifier tout (40),

(40) Tous ceux qui ont fait cela/dansé dans les rues/ out été punis.
'Everyone who did that/danced in the streets/ was punished.

or a conditional clause with quelqu'un:

(41) Si quelqu'un a fait cela, ce ne peut être qu'un maniaque.
'If anyone did that, it could only have been a maniac.

In the latter case, however, the conditional version does not make reference to an actual event in the way that (38) b. does.

Summary

What has been shown by the comparison of French and English indefinites? The most important positive result is that we have demonstrated a strong similarity between any used in the generic sense and the generic indefinites quiconque, n'importe qu- in French. That is, genericness is dependent on non-specific reference to events, whether it is expressed with a special set of lexical items, as in French, or with lexical items used in other ways, as in English. The fact that English and French have similar restrictions on generics and at the same time differ in lexical items used in conditionals, questions and negative contexts, is important evidence for the independence of genericness (with its pragmatic restrictions) from more purely semantic and syntactic categories such as negation, conditionals and questions. In French, example (40) shows that genuine universal quantification is not subject to these pragmatic restrictions, by contrast with (39) a. Examples (35) c. and (37) b. show a difference between quiconque and n'importe qui. Biclausal sentences with quiconque relative clauses and past tense are rhetorically deviant because they cannot be assertions about anyone, while similar sentences with n'importe qui are possible.

This comparison has therefore brought to light some essential properties of genericness. Indirectly, it has suggested that the universal quantification analysis of any is based on accidental factors, and that such an analysis is not likely to fit the patterns of other languages. The comparison also provides indications from French that indefinites in non-generic cases are reflexes of underlying existential quantifiers, assuming that one wants to provide a semantic analysis which fits the occurrence of lexical items as directly and un-abstractly as possible.

NOTES

[1]The pronouns with n'importe qu- as their basis 'marquent l'indifférence quant à l'unité (ou au groupe d'unités) dont il est question, lorsque le pronom ne répresente aucun substantif'. This could also be read as meaning that indefinite pronouns are not lexically specified any further than 'human' etc., but the sense I am taking it in seems to be more apt.

[2]There is evidence that negative indefinites consist of negation combined with an existential quantifier. Identify conditions are met for VP deletion, etc., when negation is detached from some, but is matched with none; Sag 1977, Williams 1977 and McCawley 1978 give arguments of this type. Ladusaw (ms) argues that the wide scope ∀ of some instances of any described their meaning incorrectly.

I would like to thank Sylvie Ben-Bachir of the French Department, U. of Illinois, for her generous assistance as a speaker of French and especially for her intelligent commentary on the sentences she was asked to judge.

REFERENCES

DAVISON, A. to appear. Any as universal or existential. In J. van der Auwera, ed. Determiners. London:Croom Helm.

GAATONE, D. 1971. Etude descriptive du système de la négation en francais contemporain. Geneva: Droz.

GOUGENHEIM, G. 1939. Système grammatical de la langue française. Paris: J. L. L. D'Artrey, A. Ronteix-D'Artrey.

HORN, L. 1972. On the semantic properties of logical operators in English. U.C.L.A. dissertation. Bloomington: Indiana University Linguistics Club.

LADUSAW, W. Ms. Some anys are some.

LEGRAND, J. E. 1974. Or and any: the semantics of two logical operators. University of Chicago dissertation.

MCCAWLEY, J. 1979. Presupposition and discourse structure. In C. K. Oh and D. K. Dineen, eds., Syntax and semantics, Vol. 11, Presupposition. New York: Academic Press.

QUINE, W. V. O. 1960. Word and object. Cambridge: M.I.T. Press.

REICHENBACH, H. 1947. Elements of symbolic logic. New York: The Free Press.

SAG, I. 1977. Deletion and logical form. M.I.T. dissertation. Bloomington: Indiana University Linguistics Club.

VENDLER, Z. 1967. Linguistics in philosophy. Ithaca: Cornell University Press.

WAGNER, R. L., and Pinchon, J. 1973. Grammaire du **français**classique et moderne. Paris: Hachette.

WILLIAMS, E. 1977. Discourse and logical form. Linguistic Inquiry 8:101-39.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

ASPECTS OF MANDINGO COMPLEMENTATION[1]

Mallafé Dramé

The present study is an attempt to provide an analysis of complementation in Mandingo, a Mande language spoken mainly in Senegal, Gambia and Guinee-Bissau. In particular, we examine the types of complement structures that occur in the language, and attempt to determine the types of complementizers and structures underlying them. The data show that there are basically two types of complementizers, clause-initial and non-clause-initial, and that the choice of these complementizers appears to depend on various semantic and syntactic factors. In attempting to determine the underlying structures of complement clauses,we are led to examine a few minor rules related to these structures.

The paper will be subdivided into three major parts. Section (1.0) will be devoted to a general introduction to simple sentence structure, focusing on word order, tense/aspect marking, and adverbial expressions. In Section (2.0),we will deal with complementation proper. In this section,we will present data on the different types of complementizers found in the language and examine their distribution. The data will be submitted to different tests to determine if Mandingo complementizers have any semantic content. Alternative approaches on how to derive these complementizers will be examined and a tentative solution will be proposed. In the same section, an analysis will be presented on how to account for the expletive pronoun a 'it', which surfaces in the direct object position of some main verbs. The notion of Complex Structure will be brought in Section (3.0) in an attempt to characterize embedded structures that seem to be unable to hold any grammatical relationship in Mandingo. It will be argued that there is a conspiracy which prohibits these structures from surfacing in any position on the Accessibility Hierarchy, as defined by Keenan and Comrie (1977). A final subsection will conclude the paper and examine the theoretical implications of the proposed analysis.

1.0 SIMPLE SENTENCE STRUCTURE

Mandingo is one of several African languages that has not been subjected to serious linguistic studies. In light of this, it is necessary to outline some salient characteristics of simple sentences before undertaking the analysis of complement clauses.

1.1 Word order: The basic word order in a Mandingo sentence is SOV, and no variation is permitted, as can be seen in (1):

1. a. Moussa yé díndíŋo loŋ[2]
Moussa TA the child know
(Moussa knows the child)

b. *Moussa yé Ø loŋ díndíŋo

c. *Moussa díndíŋo yé Ø loŋ

d. *Díndíŋo Moussa yé Ø loŋ

The direct object in a Mandingo sentence must not only be preverbal, as in (1a), but it must occur between the tense-aspect marker (TA) and the verb. If this order is violated, the resulting sentence is ungrammatical, as attested in (1b, c and d). This word order remains invariable regardless of the tense of the verb, and whether or not the verb is negated, as illustrated in (2) and (3), respectively:

2. a. Moussa bé kíŋoo domo-la
Moussa TA the food eat TA
(Moussa will eat the food)

b. *Moussa bé Ø domo-la kíŋoo

c. *Moussa kíŋoo bé Ø domo-la

d. *Kíŋoo Moussa bé Ø domo-la

3. a. Boubacar máŋ kíŋoo domo
Boubacar Neg/TA the f. eat
(Boubacar did not eat the food)

b. *Boubacar máŋ Ø domo kíŋoo

c. *Boubacar kíŋoo máŋ Ø domo

d. *Kíŋoo, Boubacar máŋ Ø domo

Sentences (2b-d) and (3b-d) are ungrammatical precisely because they violate the basic S TA DO V word order.

When a sentence contains an inherently double-object verb, the direct object still occurs preverbally, but the indirect object must follow the verb, and itself followed by a postposition. Sentences (4b-e) are ungrammatical because they violate this basic constituent ordering:

4. a. Keó yé kitááboo dii karandiriláa la
the man TA the book give the tacher to
(The man gave the book to the teacher)

b. *Keó yé karandiriláa (la) dii kitááboo

c. *Keó yé karandiriláa kitááboo dii Ø

d. *Keó yé kitáábоo karandiriláa (la) dii Ø

e. *Keó ye kitáábоo dii karandiriláa Ø

Not only is the postposition la inomissible, but the direct and the indirect objects cannot switch places, as shown in (4e) and (4b) respectively. In summary, the basic word order of Mandingo simplex sentences appears to be strictly fixed, and there are no transformations known to us that can alter it.

1.2 Tense-aspect marking: Another constituent of the sentence that needs to be mentioned here is the tense-aspect marker (TA). Unlike many African languages (e.g. Bantu languages), the tense-aspect markers in Mandingo are are independent words, as illustrated in (1) through (4), with the exception of the future tense, in which there seems to be a double tense marking, the second TA, la being suffixed to the verb (cf. 2a). Furthermore, the tense-aspect markers usually occur before the DO and the verb in transitive constructions. This can be seen in((5) below:

5. a. Boubacar yé bún-daa yele
Boubacar TA the door open
(Boubacar opened the door)

b. *Boubacar bún-daa yé yele

c. *Boubacar bún-daa yele yé

Sentences (5b) and (5c) are ungrammatical precisely because the tense-aspect marker ye has been moved from its preverbal pre-DO position. This raises the question about the underlying structure of the verb with respect to the constituent TA in general. For instrance, are all TA preverbal or postverbal ? Apart from the la suffix of the future tense, there is one instance where TA occurs after the verb, and that is with past intransitive verbs. This is illustrated in (6).

6. a. Kambaanóo sori ta kúnkoo to
the boy go early TA the farm to
(The boy went early to the farm)

b. *Kambaanóo ta sori kúnkoo to

c. *Kambaanóo ye sori kunkóo to

In (6), not only is the past tense marker of sori realized differently from that of yele 'open' in (5), but it occurs after the verb. Given the fact that both ta and yé indicate past tense, as is shown in (6) and (5) respectively, the question then arises whether they should be generated seperatelу or by a single Phrase Structure rule. If all TA markers are to be generated by a single rule, the position in which they must be generated is before the verb (and before the DO for transitive verbs),this based on distributional facts, since there are more preverbal surface TA markers than there are postverbal. If such a solution is adopted, then a TA movement rule

will be needed to later move the past intransitive ta after the verb.[4]

At this point, there is no compelling evidence leading to the adoption of one solution over the other. However, on purely empirical grounds, one would expect that if there is a rule for generating the TA marker in the base, it would operate the same fashion for both transitive and intransitive verbs within the same tense, as is the case in many languages of the world. On those grounds therefore, the second alternative, namely generating all TA markers preverbally, and letting a later rule rewrite ye postverbally as ta whenever the verb is intransitive, will be preferred.

The facts presented thus far seem to suggest that the verb or the indirect object is sentence-final, but this is not quite accurate. There are other constituents that occur sentence-finally, and these include adverbial expressions.

1.3 Adverbial expressions: Adverbs occur sentence-finally. Adverb preposing is disallowed, as may be seen in (7):

7. a. Mamadou yé a musu-maa kanu báake
   Mamadou TA he wife love much
   (Mamadou loves his wife very much)

   b. *Báake, Mamadou yé a musu-maa kanu

   c. *Mamadou yé báake a musu-maa kanu

   d. *Mamadou yé a musu-maa báake kanu

The sentences in (7b-d) are ill-formed because the adverb báake has been moved from its sentence-final position. The point to be made here is that there is in Mandingo a class of complementizers which share with adverbs the characteristic of being sentence-final, and one question that will be examined is whether or not they can be treated as such.

To sum up this section, we have shown that Mandingo simple sentences have a fixed S TA DO V word order, that based on empirical grounds, one would want to generate preverbally all TAs and let a later rule move the past intransitive TA marker after the verbs and realize it as ta, and finally that adverbs are sentence-final in Mandingo. Given such a distribution of constituents, and given the fact that object complement clauses are generally assumed to be cases of complex direct objects, one would expect them to be preverbal in Mandingo, as is the case with regular object complements. But as we shall see in a little while, this is not quite the case.

2.0 OBJECT COMPLEMENT CLAUSE STRUCTURE

There are two types of complementizers in Mandingo. Among the complementizers of Type I , which we shall refer to as clause-initial complementizers, three will be dealt with here. They are : kó, fo, and nín, which can be loosely rendered respectively as 'that', 'if, whether', and 'if, when'. Type II complementizers (henceforth called non-initial complementizers) are : dá-min 'where', ña-min 'how' and tumá-min 'when'. Consider first the clause-initial complementizers.

2.1 Clause-initial complementizers: The occurrence of these complementizers is exemplified in (8). These exemples suggest a partial similarity in the distribution of these complementizers. However, they do not have the same distribution, as shown in (9):

8. a. Moussa yé a loŋ (kó) lúntáŋo táá ta (le)[5]
Moussa TA it know that the visitor leave TA ptl
(Moussa knows that the visitor has left)

b. Moussa yé ń ñíníŋkaa fó lúntáŋo táá ta (le)
Moussa TA me ask if/whether the visitor lea. TA ptl
(Moussa asked me if the visitor has left)

c. Moussa té a lon-na níŋ lúntáŋo táá ta (le)
Moussa Neg/TA know TA if the visitor leave TA ptl
(Moussa will not know if the visitor has left)

9. a. Moussa láa ta {*fó / (kó) / *níŋ} lúntáŋo táá ta (le)
Moussa certain TA COMP the visitor lea. TA ptl
(Moussa is certain that the visitor has left)

b. Moussa yé ń ñíníŋkaa {*kó / fó / *níŋ} lúntáŋo táá ta (le)
Moussa TA me ask COMP the visit. leave TA ptl
(Moussa asked me if the visitor has left)

c. N si naa a jé{*kó / níŋ / fó} í faa-maa bé son-ná (le)
we TA come it see COMP you father TA agree ptl
(We shall see if your father agrees)

In (9a) the verb láa 'be certain' can cooccur only with kó. In (9b), on the other hand, only fó can cooccur with the verb ñíníŋkaa 'ask'. The verb jé 'see' in (9c) can cooccur with both níŋ and fó, but not with kó. It follows from these observations that there are cooccurrence restrictions between verb and complementizers in Mandingo, since , as illustrated in (9), not every verb takes every complementizer. Therefore it will be necessary to subcategorize verbs with respect to complementizers, as is done in English complementation. It remains to be determined whether this subcategorization should be based on the Factivity/Non-factivity dichotomy proposed by Kiparsky and Kiparsky (1970), or if it should be based on implicative verbs, as defined by Karttunen (1974). In a study on predicate complement clauses in Bambara, a closely related language, Amadou Touré (1975) presents an analysis which follows the semantic categorization proposed by Karttunen for English. It is not known,at this point in the research, how applicable a similar analysis will be to Mandingo.This question cannot be adequately answered here without going beyond the scope of the present paper. However it seems that an analysis à-la Karttunen would give insightfull results about the semantics of complementation in Mandingo.

In addition to verb classes, the choice of the complementizer is also sensitive to the tense of the verb. In sentence (10a), the verb lóŋ cannot

cooccur with either fó or níŋ in the past tense; however, when the same verb lóŋ is in the future tense, it can cooccur with all three initial complementizers, as shown in (10b-d):

10. a. Moussa yé a lóŋ nuŋ {*fó / (kó) / *níŋ} lúntáŋo táá ta (1e)
Moussa TA it know before COMP the visit. leave TA ptl
(Moussa knew that the visitor has left)

b. Moussa bé a lón-ná (kó) lúntáŋo táá ta (1e)
Moussa TA it know TA that the visitor leave TA ptl
(Moussa will know that the visitor has left)

c. Moussa bé a lón-ná fó lúntáŋo táá ta (1e)
Moussa TA it know TA whether the vis. leave TA ptl
(Moussa will know whetehher the visistor has left)

d. Moussa bé a lón-ná níŋ lúntáŋo táá ta (1e)
Moussa TA it know TA if the visitor leave TA ptl
(Moussa will know if the visitor has left).

Another feature , which bears crucially on the choice of the complementizer,is Negation. When (10a) is negated, as is done in (11), only níŋ cannot cooccur with the verb lóŋ, both fó and kó are acceptable, as attested in (11a and b):

11. a. Moussa maŋ a lóŋ nuŋ fó lúntáŋo táá ta (1e)
Moussa Neg/TA it know before whether the vis. leave TA ptl
(Moussa did not know whether the visitor has left)

b. Moussa maŋ a lóŋ nuŋ (kó) lúntáŋo táá ta (1e)
Moussa Neg/TA it know before that the vis. leave TA ptl
(Moussa did not know that the visitor has left)

c. *Moussa máŋ a lóŋ nuŋ níŋ lúntáŋo táá ta (1e)
Moussa Neg/TA it know before if the visit. leave TA ptl
(Moussa did not know if the visitor has left)

It appears from these facts that information related to whether the verb is in the affirmative or negative must be incoded in the lexical entry of the verb so that the appropriate complementizer can be chosen with the appropriate verb.

Given the fact that verb classes, tense and negation bear crucially on the choice of complementizers, and that transformational rules are meaning-preserving operations, it follows that complementizers will have to be given in the base by Phrase Structure rules à-la Bresnan (1972). They canno be derived transformationally à-la Rosenbaum (1967), for otherwise we would not be able to explain these distributional facts.

The next question that we will address ourselves to is how to account for the expletive pronoun a 'it', which surfaces in the DO position of (8a)

repeated in (12) for convenience:

12. a. Moussa yé a lóŋ (kó) lúntáŋo táá ta (le)
Moussa TA it know that the visitor leave TA ptl
(Moussa knows that the visitor has left)

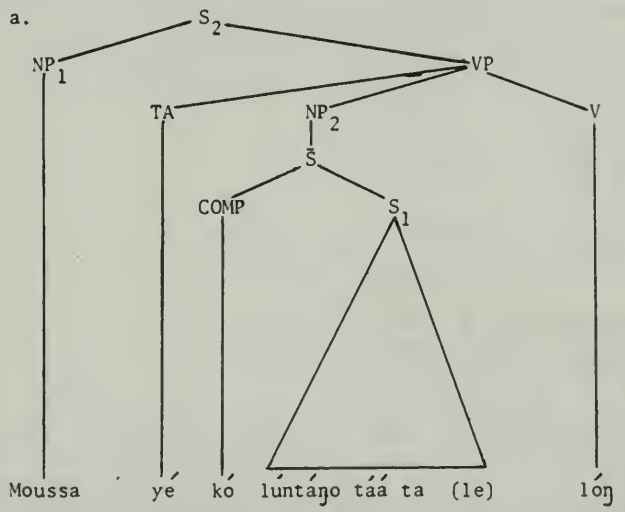
b. *Moussa yé Ø lóŋ (kó) lúntáŋo táá ta (le)

c. *Moussa yé [(ko) lúntáŋo táá ta (le)] lóŋ

Sentence (12b) is ungrammatical because the pronoun a has been omitted; (12c) is ungrammatical because the complement clause occupies the DO position. These facts raise two questions: (i) how do we derive the expletive pronoun a; (ii) how do we derive the object complement postverbally, given the fact that regular direct objects always occur preverbally. Two alternative solutions can be suggested: (i) to assume that the expletive pronoun a is a dummy pronoun, with no semantic content, generated in the base to fill the DO position, because, for a reason to be specified, the object complement cannot occupy this position, or (ii) assume that it is derived transformationally via some sort of a pronominalization rule consecutive to a movement of the object complement clause to the right. Let us examine each of these approaches in turn.

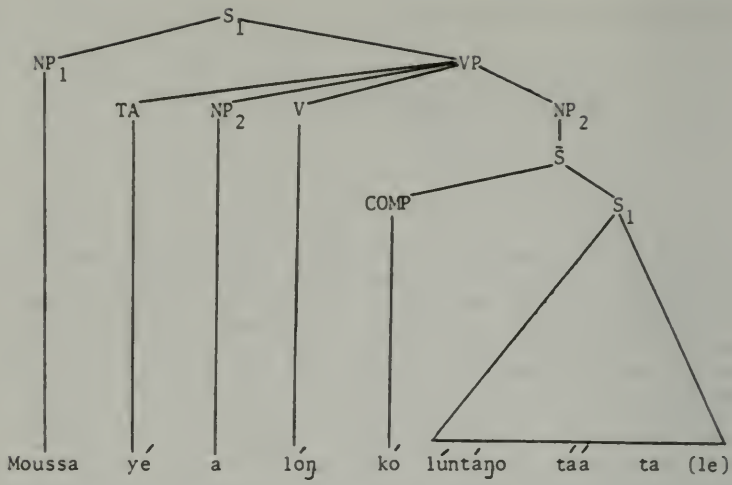
2.1.1 If the expletive pronoun is to be derived transformationally, the deep structure of (12a) would look as follows:

13. a.



To derive the correct surface structure, an obligatory right-dislocation rule would apply to NP_2 and sister-adjoin it to VP; subsequent to this movement rule, a pronoun copy of NP_2 is generated in the position NP_2 has just vacated. The result of this operation would yield the surface structure of sentence (12a), represented by the P-marker in (13b):

b.



Such an approach would not be unprecedented in Mande languages, since it has been adopted by Amadou Touré (1975) for the derivation of Bambara object complement clauses. It also follows an intuitive notion that object complement clauses functioning generally as regular direct object complements, ought to be generated in the DO position in Mandingo, that is before the main verb. In addition, to claim that the movement of NP_2 must leave a pronoun copy would not involve creating a new rule, since all movement rules in this language must leave a replacive pronoun. This can be seen in (14), where left- and right-dislocation are allowed, but not topicalization:

14. a. Kambaanóo yé kínoo domo
the boy TA the food eat
(The boy ate the food)

b. Kínno, kambaanóo yé a domo
the food the boy TA it eat
(The food, the boy ate it)

c. Kambaanóo yé a domo , kínoo
the boy TA it eat the food
(The boy ate it, the food)

d. *Kínoo, kambaanóo yé Ø domo
the food the boy TA eat
(The food, the boy ate)

The topicalized sentence (14d) is ungrammatical because the direct object position is empty. Consequently, generating the embedded clause in object position and have right-dislocation take care of moving it postverbally would not constitute adding another rule to the grammar, since these are independently motivated processes in the language. Additional evidence

that all movement rules must leave a replacive pronoun will be brought in connection with the discussion on relative clause formation.

Although this solution appears attractive, it presents a flaw in that the underlying structure that we would have to posit for (12a) is ungrammatical, as is shown in:

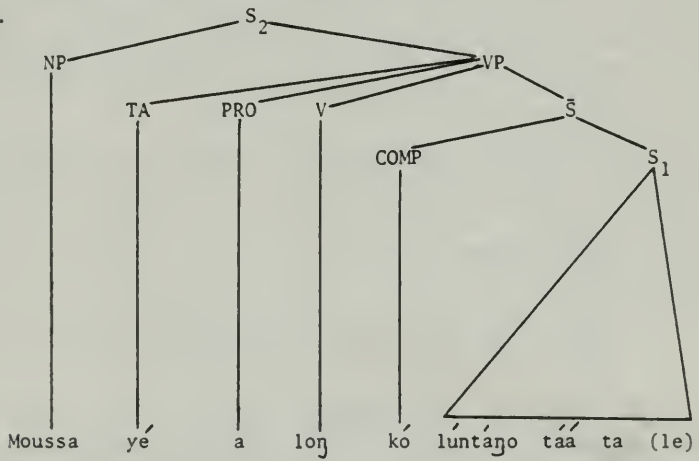
12. c. *Moussa yé [(kó) luntáŋo táá ta (le)] loŋ

A complement clause introduced by kó or any other clause-initial complementizer cannot occupy the direct object position in Mandingo.

Further, if the movement analysis were to be adopted, right-dislocation would have to be an obligatory rule; and this would be ad hoc since it does not behave as such elsewhere in the language (cf. 12a &c). Furthermore, it is not clear at this point whether complement clauses can be treated as Noun Phrases, as this analysis assumes, since, as (12c) shows, they lack one property of Noun Phrases, and that is the ability to function as direct object complements. In light of this evidence, a movement analysis such as the one just sketched will not be favored.

2.1.2 If, on the other hand, a Phrase Structure analysis is to be adopted, the deep structure of (12a) will look like (15a)

15. a.



PRO would be, as mentioned earlier, a dummy pronoun, generated in the base to occupy the direct object position, since, as was shown in (12c), complement clauses cannot function as direct objects in this language, therefore cannot be preverbal. The requirement that the DO position must be filled with a pronoun would follow from the fact that transitive verbs in this language are strongly transitive: their objects cannot be omitted. This characteristic is attested by the ungrammaticality of (16b & c):

16. a. Saajío yé ñaamóo domo
the sheep TA the grass eat
(The sheep ate the grass)

b. *Saajío yé Ø domo
(The sheep ate)

c. *Saajío ye Ø domo
(The sheep ate)
Grammatical if meaning : that the sheep be eaten.

d. Saajío yé dómóroo ke
the sheep TA eating do
(The sheep did (some) eating, or, the sheep ate)

Further, the omission of an object in a construction such as (16c) leads to a subjunctive passive interpretation. In fact, if the high tone is not omitted on the tense-aspect marker of (16b), it can in no way be given the passive interpretation of (16c), since the high tone on TA in (16b) automatically gives this sentence an active meaning. The absence of the DO would make the sentence ungrammatical. The only way to get the English meaning ' the sheep ate' is to nominalize the verb domo and use it as direct object of the verb ke 'to do'. This process, however, confirms our contention that finite transitive verbs always require a direct object. This requirement is met in (12a), although it does not explain why the embedded clause cannot occupy the direct object position, as intuitively suspected. An attempt will be made later in the paper to provide an explanation for this behavior of embedded clauses, on the basis of semantic and syntactic properties that they exhibit.

A second argument that may be advanced in favor of the Phrase Structure analysis, is passive[6], since passivization involves in part the movement of a subject into object position and object into subject position. If the expletive pronoun a is the underlying direct object in a sentence such as (17a), it ought to show up in subject position in the passive counterpart of this sentence:

17. a. Moo dóó yé a loŋ (kó) lúntáŋo taa ta
Person some TA it know that the visitor leave TA
(Someone knows that the visitor has left)

b. A lón tá kó lúntáŋo táá ta
It known TA/be that the vis. leave TA
(It is known that the visitor has left)

c. *Kó lúntáŋo táá ta lon ta
that the vis. leave TA know TA
(That the visitor has left is known)

The pronoun a does appear in subject position in (17b) as expected, the unspecified agent of this sentence being deleted. Further, the complement clause [kó lúntáŋo táá ta] cannot function as subject, as attested by the

ungrammaticality of (17c).

A further piece of evidence in support of the Phrase Structure analysis is that a never surfaces when the main verb is intransitive, like lafi 'want', in (18):

18. a. Moussa lafi ta dondikóo la
Moussa want TA the shirt PP
(Moussa wants the shirt)

b. *Moussa {yé dondikóo lafi / dondikóo lafi ta (la)}

c. Moussa lafi ta fó lúntáŋo si taa
Moussa want TA COMP the vis. TA go
(Moussa wants that the visitor leave)

d. *Moussa {yé a lafi / a lafi ta (la)} fó lúntáŋo si taa

As expected, the pronoun a does not surface with the verb lafi 'want' in (18d), because, as attested by the ungrammaticality of (18b), this verb is intransitive. It follows from this observation that the presence of a in sentences such as (12a) must be linked with the fact that the main verb in this sentence is transitive. In addition, the simple fact that we can obtain object complement clauses with intransitive verbs is evidence that they are not direct objects underlyingly, and that they should not be generated in direct object position in Mandingo. It has already been shown that embedded clauses cannot function as subjects. This observation will become crucial later in the paper, as we attempt to characterize complement clauses as'complex structures', that is a class of structures that cannot bear any syntactic relationship in Mandingo. A preliminary syntactic and semantic characterization of this class of structures will be presented later.'

So far, we have dealt with only one type of complementizers, namely clause-initial complementizers. However, unlike many languages, Mandingo has a second type of complementizers, non-clause-initial complementizers. These complementizers will constitute the subject matter of the next section.

2.2 Non-clause-initial complementizers: In addition to displaying the pronoun a in object position when the main verb is transitive, these complementizers share the following characteristics: First, they all end in miŋ which makes them look like the equivalents of English WH-complementizers, since miŋ, as it will become apparent in a moment , does function independently as relative pronoun. The sentences in (19) exemplify their occurrence:

19. a. Moussa yé a loŋ {*ko / ø} lúntáŋo taá tá ñá-miŋ
Moussa TA it know the visitor leave TA how
(Moussa knows how the visitor left/went)

b. Moussa yé a lóŋ {*kó / ø} lúntáŋo táá tá tumá-miŋ
Moussa TA it know the visitor leave TA when
(Moussa knows when the visitor left/ went)

c. Moussa ye a lóŋ {*ko / ø} lúntáŋo táá tá dá-miŋ
Moussa TA it know the visitor leave TA where
(Moussa knows where the visitor went)

The three words ñá-miŋ 'how', tumá-miŋ 'when' and dá-miŋ 'where' seem to function as genuine complementizers, since ko 'that', which was previously accepted by the verb lóŋ in the same tense in (12a) cannot cooccur with this verb when ñá-miŋ, tumá-miŋ and dá-miŋ are present in the embedded clause. The arguements that were presented for clause-initial complementizers, namely that they are sensitive to verb classes, and to some extent to negation and tense, apply to these complemtizers too. It follows from this observation that if the evidence for deriving clause-initial complementizers in the base is accepted, non-clause-initial complementizers must also be derived in the base.

The second characteristic shared by all non-clause-initial complementizers is precisely that they never occur in clause-initial position. In other words, if Mandingo Phrases Structure rules were to assign uniformly a clause-initial COMP to all complement clauses, then it would have to be assumed that the complementizers of these clauses never move into COMP. This can be seen in (20), where, by moving the complementizer into a position right at the beginning of the embedded clause, we obtain a reading in which the complementizer becomes a constituent of the higher clause. The higher clause in (20) is in fact incomplete, if it is not embedded in another higher clause. Evidence that the fronted complementizer is no longer a constituent of the lowest clause is that that clause can be introduced by an independent complementizer, such as kó, as exemplified in (20):

20. a. Moussa yé a lóŋ ñá-miŋ (kó) lúntáŋo táá ta
Moussa TA it know how that the vis. leave TA
(.... how Moussa knew that the visitor has left)

b. Moussa yé a lóŋ tumá-miŋ (kó) lúntáŋo táá ta
Moussa TA it know when that the visitor leave TA
(.... when Moussa knew that the visitor has left)

c. Moussa yé a loŋ dá-miŋ (kó) lúntáŋo taa ta
Moussa TA it know where that the visitor leave TA
(.... where Moussa where that the visitor has left)

What is happening here is simply that the complementizer, by occurring at the end of the higher clause, makes it subordinate. This is only natural, given its distributional characteristics. As stated earlier, the sentences in (20)need to be embedded in higher clause to have a completed meaning. Such an embedding is provided in (21):

21. a. Safy ñina ta Moussa yé a lóŋ ñá-miŋ (kó) lúntáŋo táá ta

(Safy forgot how Moussa knew that the visitor has left)

b. Safy ñina ta Moussa yé a lóŋ tumá-niŋ (ko) lúntáŋo táá ta
(Safy forgot when Moussa knew that the visitor has left)

c. Safy ñina ta Moussa yé a lóŋ dá-miŋ (kó) lúntáŋo táá ta
(Safy forgot where Moussa knew (learnt) that the visitor has left)

Third, none of the non-clause-initial complementizers is omissible. As stated earlier, the only omissible complementizer is ko, so that whenever there is a missing complementizer, it is automatically interpreted as kó.

Fourth, all Miŋ-complement clauses are preferred in their nominalized forms, shown in (22):

22. a. Moussa yé lúntáŋo táá-ñaa loŋ
Moussa TA the visit. leave manner/way know
(Lit. Moussa knows the visitor's manner/way of going)

b. Moussa yé lúntáŋo táá-túmoo loŋ
Moussa TA the visit. leave time know
(Moussa knows the visitor's departure time)

c. Moussa yé lúntáŋo táá-dúlaa loŋ
Moussa TA the visit. leave place know
(Moussa knows the visitor's whereabouts

The glosses for sentences (22a-c) are to be considered as approximated translations, since this kind of nominalization, although very common in Manding, does not have any real equivalence in English.

One important characteristic that Miŋ-complement clauses share with COMP-initial clauses is that they cannot function as subjects or direct objects, as shown by the ungrammaticality of (23a & b):

23. a. *Moussa yé [lúntáŋo táá tá {dá-miŋ / tumá-miŋ / ñá-miŋ}] loŋ

b. *[Lúntáŋo táá tá {dá-miŋ / tumá-miŋ / ñá-miŋ}] yé ń jaakali
(Where/when/how the visitor left/went baffled me)

c. [Lúntáŋo táá tá {dá-miŋ / tumá-miŋ / ñá-miŋ}], wo yé ń jaakali
(Where/when/how the visitor left/went ,that baffled me)

Sentences (23a & b) are ungrammatical because the complement clause occupies respectively direct object and subject positions. The only way the object complement clause construction can be made grammatical is by generating it to the right of the main verb, as in (19a-c), the preverbal DO position being filled by the pronoun a 'it'. Similarly, the only way the

subject complement clause construction can be made grammatical in (23b) is by generating it in the left, in some sort of a focus position, and letting the demonstrative pronoun wo 'that' function as the real subject. A similar phenomenon has already been observed with initial-complementizer clauses.

2.2.1 Derivation: Given these distributional characteristics, how do we derive Miŋ-complement clauses ? There seems to be two alternative solutions: the first and most straightforward would be to treat them as regular complementizers, and devise some mechamism for generating them in the base. Whether they would be generated by a single rule together with clause-initial complementizers, or by a seperate rule, is an issue to be settled somehow. The second alternative would be to treat them as instances of relative pronominalization; this would be based on the fact that miŋ functions independently as a relative pronoun (not a relative marker, since it agrees in number), in which case the first morphemes of these complementizers would have to be treated as seperate NPs. Let us examine in turn these two alternatives, starting with the last one.

2.2.1.1. Relative clause formation in Mandingo involves two major rules: (1) RCF proper , which is divided into three subrules: (a) relative pronominalization, (b) relative fronting and (c) anaphorization, and, (2) left-extraposition from NP, which moves the whole relative construction into sentence-initial position (cf. Bokamba & Dramé, 1978). The head NP, which dominates but does not precede the embedded NP (since there is left branching) , is the NP that gets relativized, as can be seen in (25a):

24. a. Moussa yé kitáábоo-lu mín-nu saŋ, Samba yé i je
Moussa TA the book pl which pl buy Samba TA them see
(Samba saw the books that Moussa bought)
(Lit: The books that Moussa bought, Samba saw them)

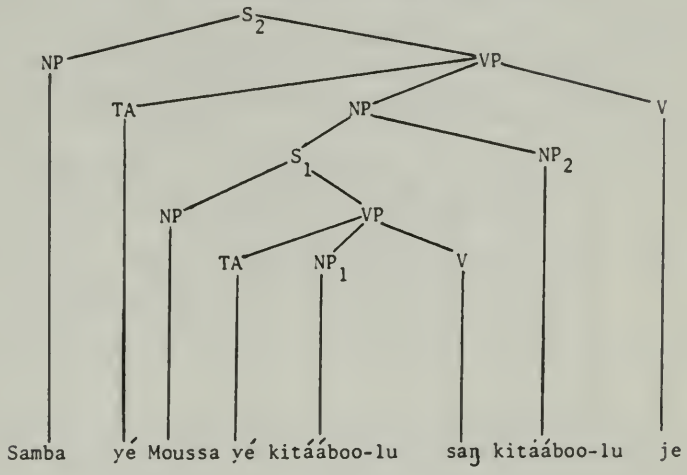
b. *Samba yé [Moussa yé kitáábоo-lu mín-nu saŋ] je

c. *Moussa yé kitáábоo-lu mín-nu saŋ, Samba yé Ø je

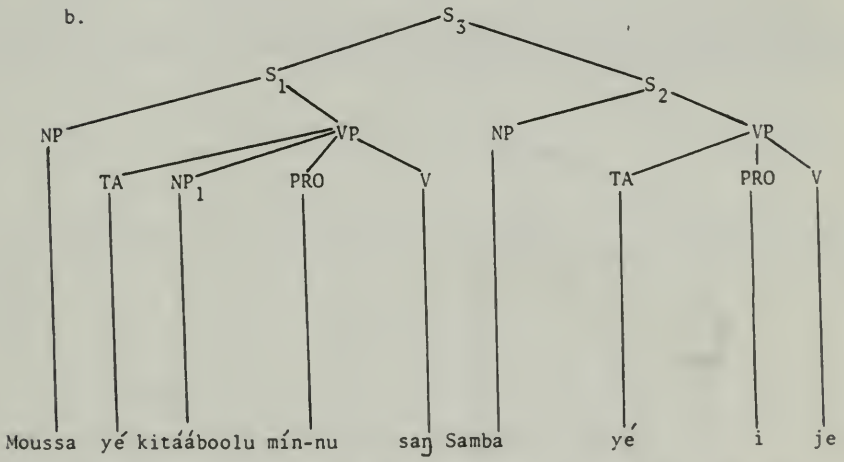
Sentence (24b) is ungrammatical because the second rule, namely left-extraposition from NP, has not applied. Notice that if the relative construction was a surface direct object , this is where we would expect it to occur, between the TA marker and the main verb je. The behavior of relative clauses is similar to that of complement clauses in this respect. The ungrammaticality of (24c) is due to the fact that no anaphoric pronoun is left in the position previously occupied by the relativized NP. Given this, the underlying structure for (24a) would be P-marker (25a). To obtain the surface structure in (24a), relative pronominalization would apply to NP_2 to change it into mín-nu, the triggering NP being the lower coreferential NP_1. Then relative fronting would lower mín-nu into a position right after NP_1 and sister-adjoin it to the lower VP. As a consequence of this movement , a resumptive pronoun i 'them' is created in the position just vacated by mín-nu. The second rule of RCF, namely left-extraposition from NP, would then apply on S_1 to move it into sentence-initial position

by Chomsky-adjoining it to S_2. The resulting structure, which is the surface structure of (24a), is represented by P-marker (25b):

25. a.



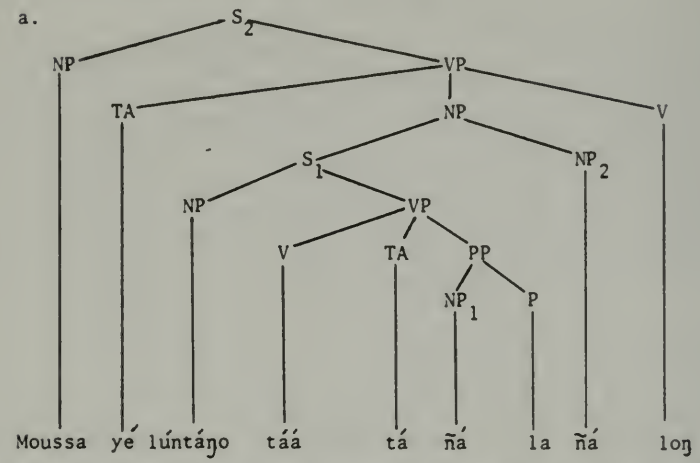
b.



The most immediate problem we would be faced with, if Miŋ-complement clauses were to be derived in this fashion, would be that the last rule of RCF would have to extrapose to the right , and not to the left as is done in regular relative clause formation (cf. Bokamba & Dramé, 1978), just in cases where Miŋ-complementizers are involved. This right-extraposition from NP would be ad hoc , since it does not apply elsewhere. Assuming that we did accept this solution however, P-marker (26a) would represent the deep structure of sentence (19a), (repeated below for convenience):

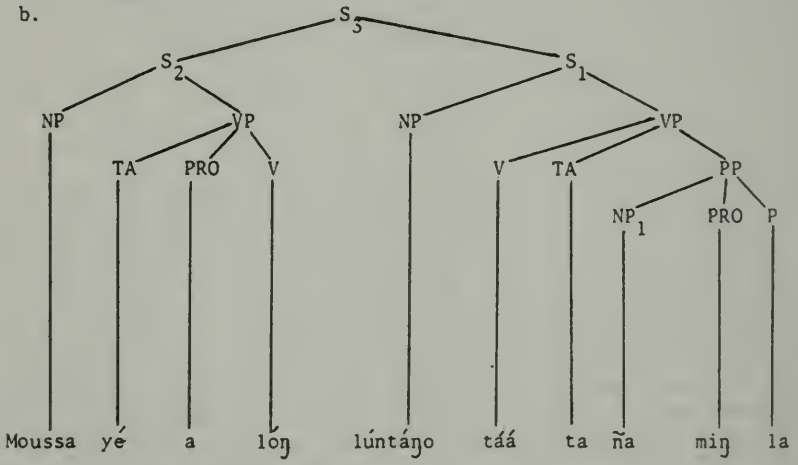
19. a. Moussa yé a lɔŋ lúntáŋo táá tá ñá-miŋ
Moussa TA it know the visitor leave/go TA how
(Moussa knows how the visitor went)

26. a.



After the application of RCF and right-extraposition from NP, we would obtain P-marker (26b), to which a late postposition deletion rule would apply to yield the surface structure in (19a):

b.



There is no independent motivation for the right-extraposition from NP, since as far as we have been able to determine, the rule involved in RCF extraposes to the left, and not to the right. The second objection to this analysis is that, if it were adopted, we would violate a constraint on Mandingo nouns, which prevents relativizing on indefinite nouns. Tumá

would be the indefinite counterpart of tumóo ' the monent', which would make it inaccessible to relativization. As for dá and ñá, they have no meaning in isolation, since the indefinite counterparts of their closest nouns dáa 'the door, the way, the price' and ñáa 'the eye, the manner' are respectively dáá and ñáá. Therefore we cannot say for sure that we are dealing with nouns in these two cases. Mandingo indefinite nouns have a very restricted distribution , and , as is shown by the ungrammaticality of (27a), relativization is one transformation they cannot undergo:

27. a. *Musú miŋ yé dondika kóyoo duŋ, Alassaan yé a je
a woman who TA dress white def. wear A. TA her see
(Alassaan saw a woman who wore the white dress)

c. Musóo miŋ yé dondika kóyóo duŋ, Alassaan yé a je
woman def. who TA dress white def. wear A. TA her see
(Alassaan saw the woman who wore the white dress)

In light of this evidence, a relativization analysis cannot be maintained for Miŋ-complementizers

2.2.1.2 The only alternative left then is to treat Miŋ-complementizers as regular complementizers, and devise a mechanism for generating them. Since these complementizers never occur in clause-initial position, Mandingo may be considered as a language that has not one, but two types of complementizers, at least on the surface. Two alternative solutions can be suggested: it can be assumed (i) that Phrase Structure rules generate both clause-initial and non-clause-initial complementizers at the same time in the base but in two different positions, or (ii) that all complementizers are generated clause-initially, the surface position of Miŋ-complementizers being the result of a movement into clause-final position. Let us examine these two approaches in turn, starting with the first one.

The first alternative would consist, as stated, in generating both types of complement clauses by a single Phrase Structure rule, the complementizers being at two different positions. Such a rule may tentatively be formulated as:

28. a. $\bar{S} \longrightarrow \begin{Bmatrix} COMPx\ S \\ S\ COMPy\ Z \end{Bmatrix}$

b. COMPx ⟶ (kó, fó, níŋ)

c. COMPy ⟶ (ñá-miŋ, tumá-miŋ, dá-miŋ)

As it stands, rule (28) should be able to generate most, if not all, Mandingo complementizers. The variable Z stands for materials such as adverbial expressions, which, like Miŋ-complementizers, occur clause-finally, as stated earlier in Section (1.3). Non-clause-initial complementizers share with adverbs the characteristic of occurring after therverb, although there is a strict order when both occur in the same clause:

29. Moussa yé a loŋ Karim táá tá $\begin{Bmatrix} *kunuŋ\ dá\text{-}miŋ \\ dá\text{-}miŋ\ (kunuŋ) \end{Bmatrix}$

(Moussa knows where Karim went (yesterday))

One consequence of rule (28) is the recognition that Mandingo has two different types of complementizers, this based on surface distributional facts. However, as we saw in (12c),(17), (23) and (24), the two types of complement clauses share a striking characteristic, which is their inability to function as subject or object. This suggests that there is a potential generalization on complement clauses that must be captured by the grammar. Within the framework just examined, this similarity will be treated as accidental . An ideal solution would be one in which the two complement structures would be generated by the same rule. This leads to the second alternative, namely generating all complementizers clause-initially, having a later rule move the complementizer after the verb, whenever COMP is filled by a Miŋ-complementizer. The Phrase Structure rule that is needed then is $\bar{S}$, as proposed by Bresnan (1973), namely :

30. $\bar{S}$ ——————▸ COMP S

Another motivation for this analysis is the need to preserve the basic structure of the sentence, in that Miŋ-complementizers are semantically understood to be averbs. In this language, adverbs occur sentence-finally. Thus non-clause-initial complementizers would be marked with the feature [+ Adv] and clause-initial complementizers with the feature [- Adv]

Similarly to complement clauses, relative constructions cannot function as direct object, as attested by the ungrammaticality of (24b)(repeated below) , or as subject:

24. b. *Samba yé [Moussa yé kitáábóo-lu mín-nu saŋ] je
Subj. DO V

31. a. *[Moussa yé kitáábóolu mín-nu sa] fili ta
Subj V
(The books that Moussa bought got lost)

b. Moussa yé kitáábóo-lu mín-nu saŋ, i fili ta
(Lit: The books that Moussa bought, they got lost)

Sentence (31a) is ungrammatical because the relative construction is functioning as the subject of the fili ta. For this sentence to become grammatical, the relative construction must be located in a focus position to the left, while the pronoun i 'they' functions as the real subject. It follows from this observation that whatever principle is involved in preventing complement clausesfrom surfacing in subject and object position in this language is very likely to be the same principle that prevents relative constructions from surfacing in the same two positions. Therefore, our grammar must be able to capture this generalization; the next section will present an attempt to characterize this behavior of embedded constructions.

3.0 SEMANTIC CHARACTERIZATION

If the complementizer movement[8] solution is adopted, then we could define Complex structure as:

32. A structure is complex if it can be underlyingly characterized as :
(i) COMP S, or,
(ii) S NP

This definition appears to be simpler, in that if $\bar{S}$ were to generate two types of complement clauses, as suggested in (28), the structural description of (32) would have to include three instead of two structures. The COMP movement analysis therefore helps us make a significant economy. In addition (32) covers both relative constructions and complement clauses.

If (32) goes through, the semantically inspired conspiracy that is attested in Mandingo can be stated as:

33. Complex Structure Conspiracy (CSC):

No complex structure can bear a grammatical relation in Mandingo.

Complex Structures must be understood as different from NPs (complex or simple) , which would explain why they do not undergo certain rules characteristic of NPs or why they do not bear any grammatical relations.The prediction made by (33) is that whenever a complex structure occurs in Mandingo,it will be a chômeur, in a focus position of some sort. More specifically, it is claimed that complex structures cannot appear anywhere on the Accessibility Hierarchy,as defined by Keenan and Comrie (1977). If this is true, then complex structures ought not to be able to function as subject, direct object, indirect object, object of postposition, possessor NP or object of a comparative particle. We have already shown that both complement clauses and relative constructions cannot function as subject or direct object. In the remainning part of the paper,we will attempt to show that they cannot bear any of the remaining grammatical relations. That complex structures cannot be indirect objects is attested in (34):

34. a. *Moussa yé kunfáa yitandi [musóo min yé dondíká kóyoo duŋ] la
Moussa TA the shop show the woman who TA dress white wear to
(Moussa showed the shop to the woman who wore the white dress)

b. [Musóo miŋ yé dóndíká kóyoo duŋ], Moussa yé kunfáa yitandi a la
(Lit: the woman who wore the white dress, Moussa showed the shop to her)

c. *N na jío sotóo ñinaŋ bé [kó Álá bala-faa ta n yé] la
we P water having this year be that God have pity us on to
(Our having water this year is due to (the fact) that God had pity on us)
pi

d. [kó Álá bafaa ta n yé], n na jío sotóo be wo la
(Lit: that God had pity on us, our having water this year is due to that)

e. *Moussa maŋ laa [musóo ka kódoo soṭo ñá-miŋ] la
Moussa Neg/TA have trustthe wom. TA money have how in
(Moussa has no trust in how the woman gets money)

f. Musóo ka kódoo soto ñá-miŋ, Moussa maŋ laa wo la
(Lit: how the woman gets/obtains money, Moussa has no trust in that)

Sentences (34a, c and e) are ungrammatical because a complex structure is object of a postposition. Each one of these sentences can be made grammatical only if a pronoun intervenes to function as indirec object or object of a postposition(structurally the same, since both are followed by a postposition.

Similarly, complex structures cannot function as possessor NPs:

35. a. *[Musóo miŋ bé búŋo kono] la dondikóo
the woman who be the room inside P the dress
(The woman who is inside the room's dress)

b. [Musóo miŋ bé búŋo kono], a la dondikóo
(Lit: the woman who is inside the room, her dress)

c. *[kó Moussa naa ta] la kéo tooñáa ti.....
that Moussa come TA P making the truth be
(That Moussa has come's being true...)

d. [Kó Moussa naa ta], wo la kéo tooñáa ti.....
(Lit: that Moussa has come, that (fact)'s being true...)

In (35a), the relative construction musóo miŋ bé buŋo kono'the woman who is inside the room' cannot directly function as possessor NP without an intervening pronoun a-'she, her', which in fact bears the grammatical relation of possessor. The same phenomenon is observed in (35c & d), in which the complement clause cannot directly be the possessor of kéo tooñáa ti 'being the truth'.

A similar distribution is attested with objects of comparative particle. Instances of simple comparison are provided in (36):

36. a. Moussa jaŋa-yáá tá Fallou ti
Moussa tall TA Fallou be
(Moussa is taller than Fallou)

b. Moussa maŋ jaŋa-yáá Fallou ti
Moussa Neg/TA tall Fallou be
(Moussa is not taller than Fallou)

No complex structure can function as object of comparison, as shown in (37):

37. a. *Fallou jaŋa-yáá ta [musóo miŋ yé dondika kóyoo duŋ] ti

(Fallou is taller than the woman who wore the white dress)

b. [Musóo miŋ yé dondika kóyoo duŋ], Fallou jana-yáa tá a ti.
(Lit: the woman who wore the white dress, Fallou is taller than her)

c. *Kódoo diyaa ta ń yé [kó Fallou yé naá jaŋ] ti
money pref. TA me to that Fallou TA come here be
(I would rather money than that Fallou come here)

d. [Ko Fallou yé naá jaŋ], kódoo diyaa ta ń yé wo ti
(Lit: that Fallou come here, I would rather have money than that)

In (37a & b), the relative construction cannot function as object of comparison if the pronoun a is not used in that position; similarly, the complement clause in (37c & d) cannot function as object of comparison without the intervention of the demonstrative wo. It follows from these observations that complex structure always are chomeur in Mandingo.

4.0 Conclusion: The structure of complement clauses and its relation to other rules of Mandingo certainly needs further investigation, but we hope to have suggested one possible analysis that might account for the facts considered here. We have presented different facts about complement clauses in Mandingo. We have shown that there are two series of complementizers in this language: clause-initial and non-clause-initial. These complementizers bear certain distributional and semantic relationships within and accross the series. For instance, it is shown that the choice of the appropriate complementizer is sensitive to semantic features that cannot be incorporated into the syntactic component, because it involves features,such as verb class, Negation, tense, which are traditionally dealt with in the base component of the grammar. The analysis of the complementizers led naturally to an examination of the structures underlying complement clauses. We saw in this regard that the main clause of a complement construction contains an expletive pronoun whenever the verb is transitive. The occurrence of this pronoun raised a question about its probable source, and we argued that it should be generated in the base. The paper also attempted to show that the inability of complement clauses to function as direct objects must be understood within the framework of a semantically inspired conspiracy, which prevents complex structures from surfacing in any position on the Accessibility Hierarchy. A tentative formal characterization of complex structures is presented which covers both complement and relative clauses, based on the fact that they both seem to be unable to bear any grammatical relations. This raised the question whether complement clauses and relative constructions should be labelled NP. The evidence presented in this paper points to the contrary, since both structures lack fundamental characteristics of NPs.

If the analysis proposed here is correct, it will provide further support for Bresnan (1972). Admittedly, there are other possible solutions to the facts presented here, but it seems to us that regardless of the approach one takes, the distributional characteristics of complementizers strongly argue for a Phrase Structure analysis.

NOTES

[1]I would like to thank Professors C. Kisseberth and J. L. Morgan for their comments and suggestions on a earlier version of this paper. My special thanks to my academic adviser, Professor E. G. Bokamba for his invaluable comments and continued guidance throughout the preparation of this paper. Any remaining errors are off course my sole responsibility.

[2]Mandingo, like many African languages, is a tone language. The language has basically two categories of tones:semantic and derived tones. Semantic (or underlying) tones,the patterns of which might be changed through the interaction of different tone rules, (thus deriving secondary or derived tones) serve,among other things, to differentiate a great number of minimal pairs, such as:

bâa : 'the goat'	báa : 'the sea, the mother'
faló̩o : 'the luck'	fáloo : 'the stick'
fantano:'the orphan, on father's side'	fantano:'variety of fish'

Only semantic tones are mentioned in the paper: a high tone corresponding to an acute accent, and the low tone to the absence of any mark on the vowel.

[3]Other preverbal TA markers are: ka and buka repectively for affirmative and negative present habitual; be and te for affirmative and negative future; ye and kana for affirmative and negative subjunctive....

[4]It is not known at this point whether the past TA movement would have to be a pre-cyclic or cyclic rule. Further research is needed to clarify this point.

[5]Le is a focusing particle (ptl) used to cleft NPs without any movement, as below:

Mamadou yé Fatou kanu :	Mamadou loves Fatou
Mamadou yé Fatou le kanu :	It is Fatou that Mamadou loves
Mamadou le yé Fatou kanu :	It is Mamadou who loves Fatou

However, the same particle le can be used to focus finite verbs:

Mamadou ye Fatou kanu(le): Mamadou does love Fatou.

[6]It is not certain at this point whether passive, as it is known in languages such as English, does exist in Mandingo as a transformation, since there is a considerable meaning difference between active sentences and their passive counterparts, which would be difficult to account for in a transformational analysis . To illustrate our point, given the active sentence (a), there are three possible candidates as its passive counterparts, each one of them having a marked meaning connected to the postpositions that introduces the by complement:

(a).Moussa yé kúmoo fo : 'Moussa said the word'
(b).Kúmoo fo ta Moussa bulu : 'the word was said by Moussa by mistake'
(c).Kúmoo fo ta Moussa fee : 'the word was said by Moussa, but he regreted it'
(d).Kúmoo fo ta Moussa la : 'the word was said by means of Moussa'

It may turn out that, as argued by Welmers (1978), that passive does not exist not only in Mandingo, but in Mande languages in general. However, if passive is to be considered as a transformation, we must devise a mechanism to incorporate the extra-meaning connected to the three postpositions fo, bulu and la into the rule of passive, so that the desired mapping is operated, whenever the by-complement is expressed.

7. The definite form of a noun is obtained by adding the -o suffix to its indefinite form:

díndíŋ+o ⟶ díndíŋo 'the child'
tantáŋ+o ⟶ tantáŋo 'the drum'

When the word ends in a short vowel, the final vowel assimilateszto the -o suffix:

kambaaní+o ⟶ kambaanóo 'the boy'
súŋgútú+o ⟶ súŋgútóo 'the girl'

When the noun ends in a long vowel, the final vowel is deleted when the suffix is added:

ii+o ⟶ io : tíí+o ⟶ tío 'the feather'
ee+0 ⟶ eo : kéé+o ⟶ keô 'the man'
aa+o ⟶ aa : kordáá+o ⟶ kordáa 'the house'

8. The nature of the Complementizer movement rule is yet to be fully investigated, if this solution is accepted.

REFERENCES

BOKAMBA, Eyamba G. and Dramé, Mallafé. 1978. Where do relative clauses come from in Mandingo ? In CLS 14. 1978. PP 28-43.
BRESNAN, Joan W. 1972. Theory of Complementation in English Syntax. M.I.T. Ph.D. dissertation. 1972.
CHOMSKY, Noam. 1976. On WH-movement. In P. W. Cullicover, T. Wasow and A. Akmajian, eds., Formal Syntax. Academic Press. 1976.
CREISSELS, Denis. 1979. Notes de recherches sur un parler Manding de la Gambie. Published in Les Annales de l'université de Grenoble.
GREEN, Georgia M. and Morgan, Jerry L. 1972. A guide to the study of syntax.
KARTTUNEN, L..1974. Presupposition and Linguistic context. In Theoretical Linguistics 1. PP 181-194.
KEENAN, E.L. and Comrie, B. 1977. Noun Phrase Accessibility and universal grammar. Linguistic Inquiry, 8, 1: PP 63-99.

KIPARSKY, P. and Kiparsky, C. 1971. Fact. In D.D. Steinberg and L.A. Jacobovits, eds., Semantics. Cambridge University Press. 1971.

LEVI, Judith N. 1978. The Syntax and Semantics of Complex Nominals. Academic Press. 1978.

LONG, R. W. 1971. A comparative study of Northern Mande Languages. Indiana University Ph.D. dissertation. Published by University Microfilms Ltd. Ann Arbor,,Michigan.

ROSENBAUM, Peter S. 1967. The grammar of English Predicate Complement constructions. Cambridge Mass., M.I.T. Press.

ROSS, John R. 1967. Constraints on Variables in Syntax.Unpublished M.I.T. dissertation.

ROWLANDS, E. G. 1959. A Grammar of Gambian Mandinka. S.O.A.S. London.

TOURÉ, Amadou, 1975. La grammaire des phrases bambara à complément prédicatif. In Annales de l'universite d'Abidjan, Serie H., t. X. 1977.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

ON THE INADEQUACY OF A GRAMMATICAL RELATION REFERRING RULE IN BANTU *

Kathryn Speed Hodges and Susan U. Stucky

In this paper we argue that a rule of Passive for HiBena (a Bantu language) formulated in a strictly relational grammar framework is not an adequate characterization. Instead, we argue that mention must be made of the number of NP's and their structure in the environment of the rule. The paper is organized in the following fashion. Section 1 introduces the problem. In Section 2 we discuss the restriction on passivization of locatives. It is argued that the environments in which passivization does not occur is not characterizable in relational terms. In Section 3 we present a second relational treatment, i.e. the promotion of locatives to direct object status before passivization. We argue against such a solution. We conclude that if Passive in HiBena is formulated as a grammatical relation changing rule, then this rule is affected by purely structural aspects of its environment.

1.0. Introduction

Within a relational grammar framework (RG), grammatical relations such as subject, direct object, and indirect object are taken to be primitives. Certain rules are claimed to operate by referring to these primitives rather than to linear order or hierarchical structures, as in a classical transformational treatment. One rule that has been given a relational formulation is that of Passive (Perlmutter and Postal (1977)). The RG treatment of Passive claims that the subject of an active sentence is demoted so that it no longer bears any grammatical relation to the verb. The direct object is promoted to subject. We consider in this paper the formulation of the rule of Passive, in HiBena, a Bantu language. In particular, we address the passivization of locatives, which is neither characterizable in terms of a promotion of the locative to direct object (a step that is required in strict adherance to the RG framework) nor generalizable by any rule that is strictly grammatical relation referring. To account for passivization of locatives in HiBena in a general fashion, one must distinguish between NP's with prepositional marking and those without (i.e. unmarked NP's). The data suggest that if Passive is to be treated as a grammatical relation changing rule in HiBena, then this rule need not be strictly grammatical relation referring.

2.0. Passivization as a grammatical relation changing rule in HiBena

If Passive is to be characterized as a grammatical relation changing rule in HiBena, then we can relate the sentences in (1) below in the following fashion. We find that the direct object of the active sentence in (1a) appears in subject position of the corresponding passive sentence in (1b), and triggers subject agreement on the verb. In addition, the subject which has been demoted appears in a by-phrase, and passive morphology shows up on

the verb.

1. (a). umudala a-gulile umwenda
woman ag-buy cloth
'(the) woman bought (the) cloth'
(b). umwenda gwa-gulil-we n-umudala
cloth ag-buy-pass by-woman
'(the) cloth was bought by (the) woman'

Locatives also passivize in parallel fashion. In (2a) below a locative appears following an intransitive verb in an active sentence, and in (2b) this locative appears as subject of the passive verb, triggering subject agreement. The subject of (2a) shows up in (2b) in the same by-phrase that was noted for passivization of direct objects in (1) above.

2. (a). umusehe a-bahile mu-myumba
old man ag-remain in-house
'(the) old man remained in (the) house'
(b). mu-nyumba mwa-bahil-we n-umusehe
in-house ag-remain-pass by-old man
'in (the) house was remained (in) by the (old) man'

It is important to note that the passivization of locatives is not restricted to sentences containing intransitive verbs. (3a) below shows a locative occurring along with a direct object in a transitive sentence. In (3b) the locative has become the subject of the corresponding passive verb. The strategy is again parallel to that of the passivization of direct objects in (1) and that of the locatives in (2).

3. (a). umudala a-nyamulile ihidoto mu-hijiji
woman ag-carry basket to-village
'(the) woman carried (the) basket to (the) village'
(b). mu-hijiji mwa-nyamulil-we ihidoto n-umudala
to-village ag-carry basket by-woman
'to (the) village was carried (the) basket by (the) woman'

2.1. A restriction on passivization of locatives

Passivization of locatives is not unrestricted, however. Locatives do not undergo passivization when two unmarked object NP's occur in the same sentence.[1] Relevant two-object constructions include benefactives (including both beneficiaries and recipients), causatives, and instrumentals. Sections (2.2 - 2.4) below include discussions of each of these types in turn. It is argued that the two NP's which block passivization are always unmarked (i.e. not in prepositional phrases) and that these NP's do not fall into any coherent relational categories.

2.2. Beneficiaries and recipients

The first construction under consideration is one which signals the presence of either a recipient or a beneficiary (when the verb is intransitive) in addition to a patient (when the verb is transitive). We will use the cover term benefactive for both recipients and beneficiaries. Such constructions are signalled by the appearance of a verbal suffix, called the

applied suffix by Bantuists. When the two object NP's occur, they are both unmarked.

The sentences in (4) seem to be related to the structures in (5) below in which the recipients or beneficiaries occur as prepositional indirect objects. The unmarked object then is treated as a direct object.

4. (a). umugosi i-hwandih-ila umudala ibaluwa
man ag-write-app woman letters
'(the) man is writing (the) woman letters'
(b). umugosi a-vih-iye umudala ifinu ifyolofi
man ag-put aside-app/T woman things many
'(the) man put aside (for) (the) woman many things'

5. (a) umugosi i-hwandiha ibaluwa hwa umudala
man ag-write letters to woman
'(the) man is writing letters to (the) woman'
(b) umugosi a-vihile ifinu ifyolofi hwa ajili ya umudala
man ag-put aside things many for woman
'(the) man put aside many things for (the) woman'

The sentences in (4) and (5) can be related by a dative movement type rule, which in RG is formulated as the promotion of the indirect objects in (5) to direct object status in (4). RG predicts that such a promotion rule should cause the underlying direct object to lose its relation to the verb and become a chomeur, a noun no longer bearing any relation to the verb and unable, therefore, to undergo any further promotion rules (i.e. Passive). As predicted, only the underlying indirect object is accessible to Passive in structures like (4). In (6a) we find that the unmarked indirect object passivizes and in (6b) we find that the underlying direct object no longer passivizes, although it does when the indirect object is not promoted (6c).

6. (a). umudala a-hwandih-ilil-we ibaluwa n-umugosi
woman ag-write-app/T-pass letters by-man
'(to) (the) woman were written letters by (the) man'
*(b). ibaluwa dza-hwandih-ilil-we umudala n-umugosi
letters ag-write-T/app-pass woman by-man
(c). ibaluwa dza-hwandih-ilwe hwa umudala n-umugosi
letters ag-write-T/pass to woman by-man
'letters were written to (the) woman by (the) man'

One RG analysis of sentences like (4), then, is that they contain an underlying indirect object, which is in fact a derived direct object, and an underlying direct object which is a chomeur, no longer accessible to Passive. A further observation that will become relevant is that sentences like (6c) (which permit only passivization of the direct object in contrast to (4) contain a prepositional indirect object.

We now take up the passivization of locatives in such structures. Compare the examples in (7) below. (7a) shows that a locative may passivize in a structure containing the prepositional indirect object and a direct object. (7b) shows that locatives may passivize when the only object of a verb is the indirect object. (7c), on the other hand shows that passivization of a locative is blocked when two non-prepositional objects (a promoted indirect object and a demoted direct object) appear.

7. (a). mu-hijiji mwa-nyamulil-we ihidoto hwa agili ya umusehe n-umudala
to-village ag-carry-pass basket for old man by-woman
'to (the) village was carried (the) basket for (the old man by (the) woman'

(b). mu-nyumba mwa-bah-ilil-we avana n-umusehe
in-house ag-remain-app/T-pass children by-old man
'in (the) house was remained (for) (the) children by (the) old man'

*(c). mu-hijiji mwa-nyamul-ilil-we umusehe ihidoto n-umudala
in-village ag-carry-app/T-pass old man basket by-woman

The data show that the presence of two relation bearing NP's (terms in a RG framework) does not block passivization of locatives since locatives do passivize in (7a), which contains both a direct object and an indirect object. The data also show that we cannot restrict locative passive by saying that it cannot occur in structures containing a promoted indirect object because locative passive is permitted in sentences like (7b). A generalization that expresses the problem evidenced by (7a) and (7c) in strictly relational terms is difficult. We could attempt to formulate this relationally by referring to the fact that the two unmarked NP's were direct objects at some point; the demoted direct object was a direct object to begin with and the benedi iary is a derived direct object. The claim would then be that there are too many direct objects (one derived and one underlying) for a locative to passivize. One might try to save a relational treatment by claiming that it is the presence of a chomeur rather than two direct objects in (7c) which blocks locative Passive. We will return to this argument in Section 2. But a further generalization does emerge. (7c) has two unmarked NP's, i.e. two noun phrases without prepositions, while (7a) and (7b) have only one.

2.3. Causatives

A second type of structure permitting two objects is the causative. Exactly the same kind of evidence can be given for these structures as was given for the benefactives in the immediately preceding section. Passive in causative sentences applies only to the causee (or embedded subject under some analyses). Again, as in the benefactive sentences just discussed, the underlying direct object is inaccessible to the promotion rule of passive and behaves like a chomeur. This patterning is evidenced in the examples (8) and (9) below. The causee of (8a) is the passive subject in the corresponding subject in (9a). But when the underlying direct object of (8a) is passivized in (9b), the result is ungrammatical.

8. (a). umusehe a-nyamul-idze umudala ihidoto mu-hijiji
old man ag-carry-C/T woman basket to-village
'(the) old man made (the) woman carry (the) basket to (the) village'

9. (a). umudala a-nyamul-idz-we ihidoto mu-hijiji n-umusehe
woman ag-carry-C/T-pass basket to-village by-old man
'(the) woman was made to carry the basket to (the) village by (the) old man'

*(b). ihidoto dza-nyamul-idz-we umudala mu-hijiji n-umusehe
basket ag-carry-C/T-pass woman to-village by-old man

When the behavior of locatives is examined in causatives, we find that

the situation is parallel to that of the benefactives. (10a) shows that a locative may passivize when a causative is formed on an intransitive verb. Note that in such cases we find only one unmarked NP. (10b) illustrates that a locative may not passivize when the verb is transitive and both the causee and underlying direct object occur. Again, these are both unmarked NP's. In relational terms they represent a derived (causee) and underlying direct object, or alternatively, a direct object and a chomeur.

10. (a). mu-nyumba mwa-bahis-idz-we avana n-umudala
in-house ag-remain-C/T-pass children by-woman
'in (the) house were made to stay (the) children by (the) woman'
*(b). mu-hijiji mwa-nyamul-idz-we umudala ihidoto n-umusehe
to-village ag-carry-C/T-pass woman basket by-old man

So far the only feasible generalizations in relational terms that can be placed on the restriction of passiviation of locatives are that the presence of a chomeur (i.e. the underlying direct object) or, alternatively, the presence of a derived direct object along with an underlying direct object, block locative passive. Such solutions can be argued against, however, with evidence from yet another class of two object constructions, the instrumentals.

2.4. A possible relational solution and evidence from instrumentals

There are two patterns for sentences containing instruments. Superficially, they resemble the patterns found for the benefactives. But, as we will see shortly, they differ from the benefactives in some crucial ways. First, Instruments occur following prepositions in sentences like (11a). In (11b) the verb carries the applied suffix and the instrument loses its proposition.

11. (a). umugosi a-vindile iliduma n-ibunduhi mu-musitu
man ag-hunt leopard with-gun in-forest
'(the) man hunted (the) leopard with (the) sum in (the) forest'
(b). umugosi a-vind-iye iliduma ibunduhi mu-musitu
man ag-hunt-inst/T leopard gun in (the) forest'
'(the) man hunted (the) leopard (with) (the) gun in (the) forest'

However, the instrumentals do not pattern like the proposed promotion in the benefactive cases. The instrument does not occur in direct object position and, crucially, it also does not gain accessibility to Passive. The examples in (12) below show that the direct object is able to passivize but that the instrument is not.

12. (a). iliduma lya-vind-ilil-we ibunduhi mu-musitu n-umugosi
leopard ag-hunt-inset/T-pass gun in-forest by-man
'(the) leopard was hunted (with) (a) gun in (the) forest by (the) man'
*(b). ibunduhi dza-vind-ilil-we iliduma mu-musitu n-umugosi
gun ag-hunt-inst/T-pass leopard in-forest by-man

In relational terms, sentences like (11b) contain a direct object and a non-term. The instrument is not a chomeur, since it never was a term to

begin with (chomeurhood being restricted to just terms that have been demoted). On the other hand, sentences like (11b) do contain two unmarked NP's.

We now turn to the behavior of locative passive in instrument constructions. In (13a) we find that locative passive is permitted just in case the instrument is prepositional. In (13b) we find that locative passive is grammatical when the instrument is non-prepositional with no other direct object. Only one unmarked noun appears, and the sentence is grammatical. In (13c), with both the non-prepositional instrument and the direct object, locative passive results in an ungrammatical sentence.

13. (a). mu-musitu mwa-vindil-we iliduma n-ibunduhi n-umugosi
in-forest ag-hunt-pass leopard with-gun by-man
'in (the) forest was hunted (the) leopard with (the) gun by (the) man'

(b). mu-hijiji mwa-gal-ilil-we wugimbi n-umugosi
in-village ag-drink-inst/T-pass beer by-man
'in (the) village was gotten drunk with beer by (the) man'

*(c). mu-musitu mwa-vind-ilil-we iliduma ibunduhi n-umugosi
in-forest ag-hunt-inst/T-pass leopard gun by-man

To return to the argument posed at the end of Section 2.2, we now see that it cannot be the appearance of a chomeur that blocks locative passive since there is no chomeur in (13c). Nor can we claim that the presence of an underlying or derived direct object blocks passive since the instrument is never a derived direct object. Thus, these attempts at making a relational generalization are ruled out.

To summarize, passivization of locatives has taken place in sentences where two terms occurred and one of these was prepositional. It has been blocked where one term and non-term occurred when both items were unmarked NP's. No relational generalization exists here, but a structural one does; passivization of locatives is blocked just in case two unmarked NP's occur in the input structure.

Since the two NP's that block Passivization do not fall into any set definable in relational terms, a solution within RG would have to list all the blocking environments separately as a condition on the rule of Passive. This would, we argue, be equivalent to coding unmarked NP's into the rule. The generalization which does hold -the presence of two unmarked NP's- can only be captured if we admit the importance of structure in relation-changing rules. Before conceding this point, however, one more possible RG solution must be considered. This approach is taken up in the next section.

3.0. One more relational formulation of HiBena passive

Within the strictest formulation of a rule of Passive in RG, only direct objects would be permitted to passivize. Thus, one might propose a solution in which the locative must be promoted to direct object before it becomes available to Passive. The locative would then be prevented from undergoing Passive in those cases where it was also prevented from being promoted. This might be achieved by claiming that the syntactic processes which create the causee and non-prepositional indirect object, being promo-

tions of a sort, create a derived syntactic direct object which cannot be demoted by a later promotion of the locative. That is, insome way the direct objects derived from causativization and dative movement prevent promotion of the locative to direct object. And therefore, the locative would not become available for Passive. There is evidence, however, to suggest that the promotion of locative to direct object does not in fact occur even when locatives are passivized.[2] If locatives promote to direct object, we would expect them to undergo other direct object referring rules. But they do not.

Object agreement is an optional rule which marks syntactic direct objects of transitive verbs. (14a) is an example of a direct object triggering object agreement. (14b) shows that derived direct objects, in this case a benefactive, also trigger agreement. In (14c) we find that locatives cannot trigger agreement in sentences in which there is a transitive verb and another direct object (even though the locative could passivize in such structures). It is not the case that locatives do not ever trigger object agreement, thus vitiating an argument that locatives never trigger agreement. In (14d) we find that locatives do trigger agreement on intransitive verbs.

14. (a). umudala a-gu-gulile umwenda
woman ag-OP-buy cloth
'(the) woman bought (the) cloth'

(b). umusehe a-hu-mw-andihila umudala ibaluwa
old man ag-T-OA-write/T woman letter
'(the) old man is writing (the) woman a letter'

*(c). umudala a-hu-gulile hu-duha umwenda
woman ag-OP-buy at-shop cloth

(d). umudimi a-hu-hu-nyila hu-mugunda
boy ag-T-OA-runfrom at-field
'(the) boy is running away from (the) field'

Thus, it appears that locatives do not in fact get promoted to direct object. A claim that locatives must be promoted to undergo Passive would have to account for the fact that locatives do not undergo the object agreement which applies to other direct objects (both derived and underlying). In effect, this turns the putative locative promotion into an entirely invisible rule.

A second argument in favor of passivization of locatives without promotion comes from the observation that locatives alone are not the only items lower on the relational hierarchy to undergo Passive. Prepositional indirect objects may also be passivized and this kind of strategy is parallel to the locative passive. (15a) is an example of a prepositional indirect object passivizing when only one unmarked noun appears. This is grammatical. (15b) shows that passivization of the indirect object is blocked in a causative with both a causee and an underlying direct object; both are unmarked NP's. (15c) on the other hand, shows that the prepositional indirect object may passivize if one of the NP's is in a prepositional phrase. In this case, a locative does not count as a blocking environment for the indirect object passive just as unmarked indirect objects do not block locative passive.

15. (a). hwa ajili ya munu hwa-vihil-we ifinu ifolofi n-umudala.
for man ag-put aside-T-Pass things many by-man.
'for (the) man were put aside many things by (the) woman.'

*(b). hwa ajili ya umusehe hwa-dimisidz-we umudimi imene n-umwageni.
for old man ag-tie up-C/T-pass shepherd goats by-mwageni

(c). hwa ajili ya munu hu-vihil-we ifinu ifyolofi mu-likundi-ili
for man ag-put aside T/pass things many in-group-this
n-umudala
by-woman
'for the man were put aside many big things in this group by (the) woman.'

The important point here is that the passivized indirect object is prepositional. There is no evidence of it's having been promoted to direct objects, as we have seen, always makes the indirect objects non-prepositional.

Taken together, the evidence from object agreement and prepositional indirect object passivization suggests that locatives do not go through a promotion to direct object and thus, the presence of a promoted direct object cannot be the factor blocking locative promotion. The inability of the locative to passivize in sentences with two unmarked NP's cannot be attributed to the inability of a locative to promote.

4.0. Conclusion

This paper has demonstrated that structural notions may interact with a purely relational process. The data from HiBena show that passivization of locatives and prepositional indirect objects is blocked when the locative or indirect object occurs with two unmarked NP's, but is not blocked by one unmarked NP. In addition, NP's which block Passive are not characterizable by a simple relational generalization. Rather, the crucial factor in blocking Passive is the structural distinction between unmarked NP's vs. NP's in prepositional phrases. We conclude that if Passive is to be formulated as a grammatical relation changing rule in HiBena, then it need not be exclusively grammatical relation referring. The structural element unmarked NP is important in the environment of the Passive rule.

NOTES

*We would like to thank Mwageni Gullas, the HiBena speaker who provided the data contained in this paper. In addition, we would like to acknowledge Professors Chuck Kisseberth, Jerry Morgan, Peter Cole, and Georgia Green for comments on various versions of the paper. Naturally, they are not responsible for any mistakes which remain. This research was supported in part by a University of Illinois Fellowship for Hodges (1977-78) and by a NDFL Title VI followship for Stucky (1977-78). This paper is a revised version of a paper under the same title that was presented at the 1978 Summer Meeting of the LSA.

[1]We will use the cover term object to refer to NP's, both unmarked and occuring in prepositional phrases since the relational status of these NP's depends on the analysis. We will use the phrases indirect object and direct object to refer to the relations NP's bear within a RG framework.

[2]The question of whether locatives promote to direct object before being passivized in Bantu languages has received some attention in the literature. For a summary of much of the work done on passive in Bantu languages within relational grammar (and an alternative treatment) see Trithart (1979) and the references therein.

RFFERENCES

PERLMUTTER, David and Paul Postal. Toward a universal characterization of passivization. In Proceedings of the Third Annual Meeting of the of the Berkeley Linguistic Society, pp. 399-417. Berkeley, California: Berkeley Linguistics Society.

TRITHART, Lee. 1979. Topicality: An alternative to the relational view of Bantu passive. Studies in African Linguistics, 10.1.1-29.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

ON THE PRAGMATIC MOTIVATION FOR PERHAPS

Nancy Yanofsky
Georgetown University

and

Dee Ann Holisky
University of Chicago

We assume Karttunen's (1972) treatment of the literal meaning of perhaps, and explore some implicatures that attach to utterances containing perhaps, and how these implicatures vary according to context of utterance and the syntactic position of perhaps, focusing on initial and final position. Three scenarios are constructed and examined to show the effects of context. We show that the notions 'degree of likelihood' and 'speaker's degree of doubt' are inadequate for a full account of the uses of perhaps.

I. Introduction

I.1. Literal versus implicated meaning.

Karttunen (1972) offers an account of the semantics of possibility in ordinary English. This account, which explicitly includes the lexical item perhaps, demonstrates that its literal meaning is a matter of speaker knowledge about the truth of the proposition that is modified by perhaps; i.e. given all that a speaker knows at time t, the time of the utterance, it is possible that the proposition is true, and furthermore, it can not be possible that its negation is also true. In order for a speaker to felicitiously utter (1)

(1) Perhaps it is raining.

It must be the case that the proposition "it is raining" is compatible with everything that the speaker knows about the world at the time of utterance. In particular, Karttunen pointed out that the speaker in uttering (1) cannot know that the proposition "it is raining" is not true, although its falsity may in fact be a logical possibility.

We will assume that Karttunen's treatment of the literal meaning of perhaps is correct and moreover constant for every instance of perhaps. At this point we have no reason to assume otherwise.

As Grice and others have demonstrated, there is more to meaning than the literal -- truth-conditional -- meaning. It has been shown that an additional kind of meaning is implicated by the interaction of the truth-conditional meaning and the use of the utterance. Gazdar's (1977) explanation is the most concise; he says: "An implicature is a proposition that is implied by the utterance of a sentence in a context even though that proposition is not a part of nor an entailment of what was actually said."

I.2. In this brief paper, we shall be concerned with the implicatures that attach to utterances containing perhaps and how these implicatures can change as a result of specific changes in the context and/or the syntactic position of perhaps. In our discussion we will focus only on perhaps as it appears in initial or final position, for example, as in (2)[1]

(2) Q: Do all of the books go in here?
A: Perhaps eventually they can go in the green room.
A': Eventually they can go in the green room perhaps.

and will ignore its occurrence in medial position, as in (3).

(3) She sings "Aida" with perhaps more vitality than any other singer.

In addition to medial perhaps, we shall exclude from our discussion utterances that appear to consist only of perhaps, as in (4).

(4) A. Liz Taylor to Susan Burton:
You'll last six months with Richard.

B. Susan B. to Liz T.:
Perhaps. But those six months will be very worthwhile.

Finally, also excluded from our discussion is the issue of how perhaps reaches its surface position; has it been transformationally moved or has it been generated in its surface position? At this point our investigation can proceed without resolving this issue.

I.3. Previous treatments of sentential modal adverbs.

There are several accounts in recent literature that deal with sentential modal adverbs; they do not list perhaps, though they do list possibly and probably. We will forego a detailed review of these articles and will discuss only the general conclusions and assumptions that are relevant to this paper. Treatments by Schreiber (1971), Corum (1975), Michell (1976), and Quirk and Greenbaum (1969) are inadequate for the following reasons: (1) None of them differentiate between the different syntactic positions that these modal adverbs occur in; (2) Quirk and Greenbaum discuss such adverbs in terms of degree of speaker doubt in the truth of the proposition, which we will show is not the relevant criteria; and finally, Schreiber, Corum, and Michell all assume that modal adverbs necessarily express a degree of likelihood. We disagree.

In what follows we will show that any adequate account of a sentential adverb like perhaps must take into account the syntactic position of the adverb, the speaker intent, and other aspects of extralinguistic context if one is to account for the contribution the modal adverb makes to the force of the utterance. We will present scenarios to show how the force of an utterance is intricately tied to the syntactic position of perhaps.

II. Three Scenarios

II.1. Initial perhaps and encouragement; the Tardy Magician context.

Consider the following scenario (due to Don Larkin). We are all at a children's party and are waiting for Mr. M & M, the Magical Magician, alias Jon, to show up. It is now 3:00, and he was scheduled to arrive at 2:00. Needless to say, the children are extremely restless and very discouraged. To keep their spirits up, one might encourage them by uttering (5).

(5) Perhaps Jon will come.

In support of our claim that (5) can be uttered as an act of encouragement, note how it can be said and what can co-occur with it. First, it can be uttered in an enthusiastic manner.

(5') Perhaps Jon will come.

It can be uttered with heavy stress on the auxiliary will which can serve to emphasize both the possibility and the probability that Jon will come, another indication of the speaker's intent to be encouraging; e.g.

(6) Perhaps Jon will come.

It can co-occur with positive reinforcing intensifiers, e.g.

(7) Perhaps Jon will really come.

And also, other phrases of encouragement as well as reasons why the addressee should believe the proposition "Jon will come" can co-occur with (5):

(8) (a) Perhaps Jon will come. Don't be sad.
(b) _____. Don't get discouraged.
(c) _____. He's never let me down in all the years I've known him.
(d) _____. There's often a lot of traffic on Key Bridge this time of day.
(e) _____. after all.

Notice that the corresponding sentence with perhaps in final position,

(9) Jon will come perhaps.

is much less natural as an act of encouragement, although we do not want to say that it is an act of discouragement; we merely want to point out that it is different from the utterance with sentence initial perhaps.

Sentence (9) is unlikely to be uttered in an enthusiastic manner or with heavy stress on the will. Examples like (10a) or (11a) where the proposition has been amplified with really or at all, are equally unlikely. We have observed that the more perhaps is set off from the proposition, the easier it becomes to pronounce, as represented in (10b and c) and (11b and c). These sentences are unlikely to be uttered as acts of encouragements.

(10) (a) Jon will really come perhaps.
(b) Jon will really come, perhaps.
(c) Jon will really come. Perhaps.

(11) (a) Jon will come after all perhaps.
(b) Jon will come after all, perhaps.
(c) Jon will come after all. Perhaps.

When (9) is followed by reasons why the addressee should believe the proposition, it is much harder to understand as an act of encouragement. In our examples with perhaps in initial position, it is important to note that the possibility of P is part of the literal meaning of perhaps, while the probability of P is part of the conversationally implicated meaning. If (5) is interpreted as an act of encouragement, then the addressee might calculate, via Grice's maxims, that P has a high degree of likelihood and/or that the speaker believes it.

Similarly, it is also possible to interpret (12) as an act of encouragement. Consider the farmer who, after a long, dry spell, walks outside, looks up at the sky and notices some dark clouds. It is quite possible that he could turn to whomever is with him or even utter to himself:

(12) Perhaps it will rain today.

When opposed to (12), (13)

(13) It will rain today perhaps.

seems like a much less optimistic and less encouraging utterance. However, what one knows about the speaker, his beliefs and his world knowledge are crucial in determining what and how perhaps contributes to the force of any utterance.

II.2. Initial perhaps and requesting; the Holiday Party context.

Let us consider a different scenario. Sally and Jane are neighbors, casual acquaintences, and Jane is giving a holiday party. Sally would like to do something for Jane and asks her: "What can I do for the party?" Jane, believing that Sally has asked sincerely and really wanting some help, responds by saying,

(14) Perhaps you can come early and help. It is our contention that (14) functions as an indirect request in a way that (15) does not.

(15) You can come early and help perhaps.

A way to test the possible force of an utterance is to see how it can be reported. Either (16) or (17) can report (14); but only (17) can report (15).

(16) (a) She asked me if I could come early and help.
(b) She asked me to come early and help.

(17) (a) She said I could come early and help.
(b) She said if I wanted to I could come early and help.

Furthermore, elements which are interpreted as intensifying the request are more acceptable with (14) than with (15).

(18) (a) Perhaps you can really make a concerted effort to come early and help.
(b) You can make a really concerted effort to come early and help perhaps.

II.3. Initial perhaps and persuading; the Good Doctor context.

In our final scenario, we have a doctor talking to a patient, an elderly woman. The doctor has just concluded that the patient has a heart condition, but the patient, all of whose relatives have died of heart attacks, clearly wishes to avoid facing this dreadful possibility. She says to the doctor, "Oh, doctor, I don't know what's wrong with me. I get flushed and out of breath when I climb stairs, and I have this intermittent pain in my chest. Do you think it's old age?" The doctor replies in a gentle voice,

(19) Miss Flink, perhaps you have a heart condition. In this context as well, there is a difference between initial and final perhaps. If Miss Flink arrives with the same symptoms, a response such as (20),

(20) Miss Flink, you have a heart condition, perhaps, seems to us to be much less felicitous, given that the doctor knows in fact that she has such a condition.

An additional observation can be made from this example. It cannot just be degree of likelihood that is relevant to perhaps, because the speaker of an utterance with perhaps may very well know or believe that the proposition under perhaps is true and yet felicitously utter a sentence containing it.

III. Conclusion.

III.1. We have specified three rather restricted contexts in which a sentence with perhaps might be uttered. Our last context involved a speaker, the doctor, who knew that the proposition under perhaps was true; in the previous context, the speaker of (14)

(14) Perhaps you can come early and help.

wanted the proposition under perhaps to be true; and, in the first context, the speaker wanted the hearers, the children, to believe that the proposition under perhaps was true; he wanted the children to believe that the magician would really come.

These examples show that the notions 'degree of likelihood' or 'speaker's degree of doubt as to the truth of the proposition' are inadequate in and of themselves for accounting for all uses of perhaps. (For example, if what perhaps means is 'degree of doubt' then when it is

used in the doctor example, where there is no degree of doubt, it doesn't mean what it is supposed to mean.)

The speaker's intent when uttering the sentence seems to be a much more important determinant of the implicated meaning. In these examples the speaker means to persuade, request, or encourage the listener. In each instance, the force of the utterance would be different if the speaker had expressed the identical proposition without the perhaps; and, of equal importance is the fact that the same force is not conveyed when perhaps is in final position.

(21) (a) You have a heart condition.
(b) Perhaps you have a heart condition.
(c) You have a heart condition perhaps.

(22) (a) You can come early and help.
(b) Perhaps you can come early and help.
(c) You can come early and help perhaps.

(23) (a) Jon will come.
(b) Perhaps Jon will come.
(c) Jon will come perhaps.

III.2. The observations presented here must necessarily be viewed as a first step into the complexities of the use of perhaps. There are obviously many more contexts, more uses, more implicatures that have yet to be considered. As we noted in the introduction, we excluded perhaps in medial position as well as its occurrence in a one-word utterance. We have also ignored syntactic derivation, scope, verb class and verb tense, problems of style and intonation contours.

Unfortunately at this time we cannot add any insights into the differences and similarities between perhaps and other possibility operators, like possible, maybe, conceivable, and perchance. Nor can we explain why a speaker chooses one over the other in a given context, or why perhaps is the only sentential modal adverb which occurs in final position in interrogatives, as illustrated by (24) and (25).

(24) (a) Perhaps Jon is too sick to call.
(b) Jon is too sick to call perhaps.
(c) Is Jon too sick to call perhaps?

(25) (a) Possibly Jon is too sick to call.
(b) Jon is too sick to call possibly.
(c) *Is Jon too sick to call possibly?

If Karttunen is correct in assuming that the literal meaning of these possibility operators is the same, then is it also not reasonable to hypothesize that the implicated meanings in the same context will also be the same? This is to be expected if the implicatures are conversational and therefore not detachable. Perhaps the observations we have made about the behavior of perhaps in these three restricted contexts can be generalized for the class of possibility operators in ordinary English.

NOTE

[1]Example (2A) uttered by Cecelia Freeman, September 15, 1978; (3) from radio station WGMS, December 4, 1978; example (4B) from the Washington Post, December 21, 1978.

REFERENCES

CORUM, Claudia. 1975. A pragmatic analysis of parenthetic adjuncts. CLS 11.

GAZDAR, Gerald. 1977. Implicature, presupposition and logical form. Indiana University Linguistics Club.

GREENBAUM, Sidney. 1969. Studies in English adverbial usage. Coral Gables, FL: University of Miami Press.

GRICE, H. Paul. 1975. Logic and conversation. Syntax and semantics III.

KARTTUNEN, Lauri. 1972. Possible and must. Syntax and semantics, I.

MICHELL, Gillian. 1976. Indicating the truth of propositions: a pragmatic function of sentence adverbs. CLS 12.

QUIRK, Randolph and Sidney Greenbaum. 1975. A concise grammar of contemporary English. NYC: Harcourt Brace Jovanovich, Inc.

SCHREIBER, Peter. 1971. Some constraints on the formation of English sentence adverbs. Linguistic Inquiry II.1.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

SOME REMARKS ON RELATIVIZATION IN IMBABURA QUECHUA*

Janice Jake

In this paper I discuss certain aspects of Relativization in Imbabura Quechua, an Ecudorian highland Quechua language. The first portion of the paper is devoted to a general description of certain of the more fundamental aspects of Relativization in Imbabura. The second portion examines examines an analysis of Relativization in three Quechua languages by Cole, et al., (1978a, b) in which it is proposed that relative clauses lacking heads in their surface structure provide evidence for the hypothesis advanced by Brame (n.d.) that relative clauses are underlyingly headless. After examining the Quechua data in considerable detail, I argue that the fact that there are many restrictions on the occurance of headless relative clauses but no restrictions on the occurance of relative clauses with heads supports an analysis in which headless relative clauses are derived through the application of a rule of head deletion. Furthermore, it is shown that the rule deleting the head of a relative clause can apply to relativization of subjects, but not to other terms, such as direct objects or indirect objects. The fact that accusative experiencer subjects cannot be relativized by the head deletion strategy brings into question the status of these non-nominative NPs which exhibit the behavorial properties of subjects, while lacking their morphological coding properties.

1. Relativization in Imbabura Quechua (IQ).

In IQ there are relative clauses both with and without heads. I begin this section by examining relative clauses with heads, presenting data related to the selection of nominalization suffix, word order, case marking, passive, and deverbal nouns. I then turn to an examination of headless relative clauses.

1.1. Left branching, nominalized relative clause structure.

The head of a relative clause in IQ generally occurs to the right of the relative clause, as shown in (1) through (3). This is typologically consistant with the fact that IQ, like other Quechua languages, is an SOV language. The verb of the relative clause is nominalized with one of three suffixes. The choice of nominalizer is determined by the temporal and aspectual relation of the relative clause to the matrix clause. The past/perfective marker is -shca. The present/habitual marker is -j. The future/potential marker is -na.

(1) [atalpa-ta yañu-shca] warmi-ca shamu-ju-n-mi[1]
chicken-acc cook-past woman-top come-prog-3-val

'the woman who cooked the chicken is coming'

(2) [wawa-cuna-ta yachachi-j] padri-ca ri-nga-mi
child-pl-acc teach-pres padre-top go-3fut-val

'the padre who teaches the children will go'

(3) [Quitu-man ri-na] awadur-ca cai-pi-mi causa-n
Quito-dat go-fut weaver-top here-loc-val live-3

'the weaver who will go to Quito lives here'

In relative clauses with heads, as in (1) through (3), only the temporal and aspectual relation of the relative clause to the matrix clause is relevant in the selection of the nominalizer. Other criteria, such as the grammatical relation of the relativized NP, are not relevant. Direct objects, indirect objects, and NPs bearing other grammatical relations can be relativized with any of these three nominalization suffixes:

(4) [warmi jari-man cara- (a) shca] aswa-ca cai-pi-mi
(b) j
(c) na
woman man-dat give- (a) past chicha-top here-loc-val
(b) pres
(c) fut
'the chicha which the woman (a) gave the man is here'
(b) is giving
(c) will give

(5) [warmi aswa-ta cara- (a) shca] jari-ca cai-pi-mi
(b) j
(c) na
woman chicha-acc give- (a) past man-top here-loc-val
(b) pres
(c) fut
'the man who the woman (a) gave the chicha is here'
(b) is giving
(c) will give

1.2. Verb final word order constraint in subordinate clauses.

Basic word order in IQ is SOV, although in main clauses word order is extremely free. In subordinate clauses the verb is in final position, although the order of the remaining constituents is relatively free within the clause. The examples in (7) through (9) illustrate this restriction on the position of the verb in sentential complements, purpose clauses, and adverbial clauses. This restriction on word order contrasts with the free word order in main clauses:

(6) Free word order in main clauses.
S IO DO V jari warmi-man anacu-ta cara-rca-mi
man woman-dat skirt-acc give-3past-val

'the man gave the woman the skirt'

S IO V DO jari warmi-man cara-rca-mi anacu-ta-ca
-top
S DO V IO jari anacu-ta cara-rca-mi warmi-man-ca
IO DO V S warmi-man anacu-ta cara-rca-mi jari-ca
DO IO V S anacu-ta warmi-man cara-rca-mi jari-ca
DO V S IO anacu-ta cara-rca-mi jari-ca warmi-man
IO V S DO warmi-man cara-rca-mi jari-ca anacu-ta

(7) Verb final word order in sentential subject complement.

[jari warmi-man anacu-ta cara-ju-y-ca][2] ali-mi
man woman-dat skirt-acc give-prog-pres-top good-val

'it is good that the man is giving the woman the skirt'

*{[jari warmi-man cara-ju-y-ca anacu-ta]
[jari anacu-ta cara-ju-y-ca warmi-man]
[warmi-man anacu-ta cara-ju-y-ca jari]} ali-mi

(8) Verb final word order in purpose clause.

Quitu-man ri-ju-nchi [jari warmi-man anacu-ta cara-chun]
Quito-dat go-prog-1pl man woman-dat skirt-acc give-purp

'we are going to Quito in order for the man to give the woman the skirt'

*Quitu-man ri-ju-nchi {[jari warmi-man cara-chun anacu-ta]
[jari anacu-ta cara-chun warmi-man]
[warmi-man anacu-ta cara-chun jari]}

(9) Verb final word order in adverbial clause.

[jari warmi-man anacu-ta cara-jpi-ca] cushi-mi ca-nga
man woman-dat skirt-acc give-adv-top happy-val be-3fut

'when the man gives the woman the skirt, she will be happy'

*{[jari warmi-man cara-jpi-ca anacu-ta]
[jari anacu-ta cara-jpi-ca warmi-man]
[warmi-man anacu-ta cara-jpi-ca jari]} cushi-mi ca-nga

The verb final restriction on word order in subordinate clauses also applies to relative clauses. This is shown in (10). Within a relative, almost any word order is possible, providing that the nominalized verb is in clause final position. It was noted in Cole, et al. (1978a, b) that a constituent of a relative clause could not follow the nominalized verb of the clause, but this observation was characterized as a condition on strict SOV word order in relative clauses rather than a verb final restriction on word order in all subordinate clauses.

(10) Verb final word order in relative clause.

[warmi-man anacu-ta cara-ju-j] jari-ca shamu-rca-mi
woman-dat skirt-acc give-prog-pres man-top come-3past-val

'the man who is giving the woman the skirt came'

* [warmi-man cara-ju-j anacu-ta] jari-ca shamu-rca-mi
[anacu-ta cara-ju-j warmi-man]

(11) Free word order in relative clause.

[caina jari warmi-man cara-shca] anacu-ca milma-manda-mi
yesterday man woman-dat give-past skirt-top wool-abl-val

'the skirt the man gave the woman yesterday is out of wool'

[jari warmi-man caina cara-shca] anacu-ca milma-manda-mi
[jari caina warmi-man cara-shca]
[warmi-man jari caina cara-shca]
[warmi-man caina jari cara-shca]
[caina warmi-man jari cara-shca]

A rule which scrambles the word order of the constituents of a clause is required to account for possible word orders of main and subordinate clauses. A single rule scrambling the word order of a clause with the condition that a constituent cannot be moved to the right of a subordinate clause verb or two rules, one applying within main clauses and another within subordinate clauses, will account for the data. It is not clear which, if either, alternative is to be preferred, so I will arbitrarily select the first. The rule which scrambles the word order of the constituents of a clause interacts with other rules in IQ, notably one which optionally deletes the accusative suffix in nominalized clauses.

1.3. Case marking in nominalized clauses and accusative case deletion.

NPs within subordinate clauses are marked with the same case suffixes as NPs in main clauses. These postpositions indicate the grammatical relation of the NP within the clause. As noted in Cole, et al. (1978a, b) the accusative case marker -ta can be optionally deleted within relative clauses. It is not possible to delete other case markers within relative clauses.

The optional deletion of the accusative suffix depends on a number of factors, among them word order within the clause, the grammatical relation of the accusative NP, pragmatics, and the nominalizing suffix of the clause. I argue later that the rule which deletes the accusative case marker cannot apply in relative clauses which are headless.

When a direct object NP immediately precedes the nominalized verb of a relative clause, the accusative case marker can be deleted, as in (12a) and (13a). When a direct object does not immediately precede the verb, the accusative suffix cannot be deleted:

(12) a. [iglizia ladu-pi {wasi-Ø / wasi-ta} rura-shca] runa-ta-ca rijsi-ni-mi
church side-loc {house-Ø / house-acc} make-past man-acc-top know-1sg-val
'I know the man who built the house next to the church'

b. [{*wasi-Ø / wasi-ta} iglizia ladu-pi rura-shca] runa-ta-ca rijsi-ni-mi
=(12a)

(13) a. [can {anacu-Ø / anacu-ta} cara-shca] warmi-ca cai-pi-mi
you {skirt-Ø / skirt-acc} give-past woman-top here-loc-val
'the woman you gave the skirt to is here'

b. [{*anacu-Ø / anacu-ta} can cara-shca] warmi-ca cai-pi-mi
=(13a)

This rule which optionally deletes the accusative case suffix from a direct object NP immediately preceding the verb of a relative clause also applies in sentential subject and sentential object complements, but not in nonnominalized subordinate clauses, such as purpose clauses or adverbial clauses, as shown in examples (14) through (17).

(14) Accusative case deletion in sentential subject complement.

[wambra sara(-ta) micu-ju-y-ca] ali-mi
boy corn(-acc) eat-prog-pres-top good-val

'it is good that the boy is eating corn'

(15) Accusative case deletion in sentential object complement.

[quitsa llama(-ta) michi-ju-j-ta-ca] ni-wa-rca-ngui-chu
girl llama(-acc) herd-prog-pres-acc-top say-1sgobj-past-2sg-Qval

'did you tell me that the girl is herding llamas?'

(16) Unacceptable accusative case deletion in purpose clause.

jari-ca plaza-man ri-rca-mi[{*aicha-Ø / aicha-ta} randi-ngapaj]
man-top plaxa-dat go-past-val {meat-Ø / meat-acc} buy-purp
'the man went to the plaza in order to buy meat'

(17) Unacceptable accusative deletion in adverbial clause.

[Juan {*cai jari-Ø / cai jari-ta} tapu-shpa-ca] yacha-nga-mi
Juan {this man-Ø / this man-acc} ask-adv-top know-3fut-val
'if Juan$_i$ asks this man, he$_i$ will know'

The examples in (12) through (17) show that the rule which deletes the accusative case marker applies only in nominalized clauses, and not in other subordinate clauses. Thus far two restrictions on the application of a rule deleting accusative case have been observed; the accusative marked object must immediately precede a verb which has been nominalized. If it is assumed that the direct object immediately precedes the verb of a clause in the most basic word order in IQ, it is possible to correctly predict that an accusative case marker can be deleted from a direct object NP when it immediately precedes a nominalized verb by ordering the rule which scrambles the word order of the constituents of a clause before the rule which deletes the accusative case marker from an object immediately preceding a nominalized verb. The alternative rule ordering would require a global condition on scrambling; it would be necessary for scrambling to be sensitive to the application of accusative case deletion. I will assume that the first solution which relies on rule ordering to be preferrable to one requiring a global condition on an optional rule.

The causative construction provides further evidence for the rule ordering solution. In the causative construction, both the causee and the direct object of a transitive clause are marked with accusative case.[3] In a nominalized clause the accusative case marker can be deleted from the causee when it immediately precedes the verb. In a transitive causative construction the accusative case marker can be deleted from either the direct object or the causee when they immediately precede a nominalized verb.

(18) [wawa(-ta) puñu-chi-shca] warmi-ca micu-ju-n-mi
child(-acc) sleep-caus-past woman-top eat-prog-3-val

'the woman who made the child sleep is eating'

(19) a. [ruwana-ta churi(-ta) awa-chi-shca] jari-ca cai-pi-mi
poncho-acc son(-acc) weave-caus-past man-top here-loc-val

'the man who made his son weave a poncho is here'

b. [churi-ta ruwana(-ta) awa-chi-shca] jari-ca cai-pi-mi
son-acc poncho(-acc)
=(19a)

c.*[ruwana churi-ta awa-chi-shca] jari-ca cai-pi-mi
poncho son-acc
(=(19a))

d.*[churi ruwana-ta awa-chi-shca] jari-ca cai-pi-mi
son poncho-acc
(=(19a))

The solution ordering the rule which scrambles the word order of constituents in a clause before the rule which deletes the accusative case marker in nominalized clauses also accounts for the facts regarding the deletion of -ta in nominalized causative constructions by allowing the rule which scrambles word order to both feed and bleed the application of the rule which deletes accusative case from an NP immediately preceding a nominalized verb.

1.4. Accusative case deletion and inversion: experiencer constructions.

Although direct objects and causees are treated similarily by the rule which deletes accusative case suffixes in nominalized clauses, a third class of accusative NPs is treated differently; the accusative case deletion rule does not apply to preverbal experiencer NPs in nominalized clauses.

The two kinds of experiencer constructions in IQ can be distinguished on morphological and syntactic grounds. For convenience, I will refer to the two classes of predicates governing the experiencer construction as desiderative predicates and lexical predicates. The experiencer NP of a desiderative predicate can occur in accusative case or in nominative case; a nominative case experiencer NP is usually topicalized. Regardless of the case of the experiencer NP, it does not trigger subject verb agreement, the verb always occuring with third person subject agreement, as shown in (20) Lexical experiencer predicates, such as rupa- 'be hot', nana- 'suffer', and chiri-'be cold', require an accusative experiencer NP and have third person subject verb agreement. As shown in (22), the possibility of nominative case does not exist for experiencer NPs of lexical predicates.

(20) a. jari(ta)ca pũnu-naya-n-mi
man(acc)top sleep-desid-3-val

'the man would like to sleep'

b. can(da)ca ufya-naya-n-llu
you(acc)top drink-desid-3-Qval

'would you like to drink?'

(21) a. jari-ta rupa-n-mi
man-acc be hot-3-val

'the man is hot'

b. can-da-ca nana-ju-n-llu
you-acc-top hurt-prog-3-Qval

'are you suffering?'

c. ñuca-ta-ca chiri-n-mi
I-acc-top cold-3-val

'I'm cold'

(22) a. *jari-ca nana-ju-n-mi
man-top hurt-prog-3-val

'the man is suffering'

b. *ñuca-ca chiri-n-mi
I-top cold-3-val
'I'm cold'

The syntactic and morphological properties of experiencer NPs in IQ are discussed more fully in Cole and Jake (1978). The analysis suggested there proposes an inversion rule which demotes underlying subject NPs to direct object relation. This demotion rule is ordered after those rules which treat experiencer NPs as subjects and before those which treat experiencer NPs as objects, the specific governing class determining whether inversion precedes or follows a certain rule. As indicated by the examples in (20) through (22), inversion of lexical experiencers invariably precedes case marking whereas inversion of desiderative experiencers optionally precedes case marking.

The rule of accusative case deletion does not apply to delete the accusative suffix from an experiencer NP in a nominalized lexical experiencer construction, although this appears to be possible in a nominalized desiderative experiencer construction. The sentences in (23) are ungrammatical, while those in (24) are only slightly questionable.

(23)a [*jari chiri-shca-ta] ni-wa-rca-ngui- chu
man cold-past-acc say-1sgobj-past-2sg-Qval

'did you tell me that the man was cold?'

b [* can nana-ju-y-ta-ca] .kunga-ni-mi
you hurt-prog-pres-acc-top forget-1sg-val

'I forget that you are in pain'

(24)a.[(?)jari micu-naya-shca-ta] ni-wa-rca-ngui- chu
man eat-desid-past-acc say-1sgobj-past-2sg-Qval

'did you tell me that the man was hungry?'

b. [(?)can ufya-naya-shca-ta-ca] cri-ni-mi
you drink-desid-past-acc-top believe-1sg-val

'I believe that you were thirsty'

While it may appear that accusative case deletion has applied to the experiencer NPs in (24), it is more likely that the topic marker which is usually suffixed to nominative case desiderative experiencer NPs has been deleted. When such desiderative experiencer NPs are topicalized, as in (25), they can occur freely in nominative case in nominalized clauses, although lexical experiencer NPs cannot.

(25) [jari-ca micu-naya-shca-ta] ni-wa-rca-ngui-chu
man-top eat-desid-past-acc say-1sgobj-past-2sg-Qval

= (24a).

(26)[*jari-ca nana-ju-shca-ta] ni-wa-rca-ngui-chu
man-top hurt-prog-past-acc say-1sgobj-past-2sg-Qval

'did you tell me that the man was suffering?'

While rule ordering can account for the difference in case marking between lexical and desiderative experiencer NPs, it offers no explanation for the failure of the rule which deletes accusative case in nominalized clauses to apply to accusative experiencer NPs. In transitive experiencer constructions, both desiderative and lexical, the accusative case suffix can be deleted from an object immediately preceding a nominalized verb.

(27) [jari-ta uma(ta) nana-ju-shca-ta] ni-wa-rca
man-acc head(acc) hurt-prog-past-acc say-1sgobj-3past

'he told me that the mans head was hurting'

(28) [warmi-ta aswa(ta) ufya-naya-shca-ta] ni-wa-rca
woman-acc chicha(acc) drink-desid-past-acc say-1sgobj-3past

'he told me that the woman wanted to drink chicha'

The grammaticality of (27) and (28) shows that the inability of accusative case deletion to apply to inverted accusative experiencer NPs cannot be treated as an indication that the experiencer construction somehow fails to meet the conditions of accusative case deletion, but rather that only the inverted accusative experiencer NPs are exceptions.

The rule of inversion in IQ remains problematic. In the treatment proposed in Cole and Jake the rule must be postcyclic or last cyclic, an apparent violation of the Cyclicity Law formulated to restrict rules creating or destroying termhood to cyclic rules in the relational grammar framework developed by Postal and Perlmutter (1974). Inversion of both lexical and desiderative experiencers would precede verb agreement. Inversion of desiderative experiencers would optionally precede case marking. Inversion of lexical experiencers would obligatorily precede object verb agreement, referred to as Patient Object Cliticization in Cole and Jake, and optionally precede subject coreference-switch reference in some subordinate clauses. In terms of Keenan's (1976) distinction between morphosyntactic coding properties and syntactic behavioral properties, these rules, which treat experiencer NPs as nonsubjects,are among the coding properties characteristic of NPs in IQ, not among the behavioral properties.

In view of the fact that the rule of inversion was formulated to explain the lack of reference to a single NP as subject of a clause, as in passive, part of the motivation for inversion as a relation changing rule in IQ,rather than a case marking rule, is lost. Another problem in the analysis of inversion in IQ is that the direct object NP is not promoted to subject, necessary for the expereincer NP to be demoted to chômeur(c.f. Relational Annihilation Law, Postal and Perlmutter), leading to the assumption that a dummy must have been promoted to subject. Assuming that the experiencer NP has become a chômeur, the Chômeur Advancement Law requires that a chômeur be advanced to indirect object, not direct object, as in IQ. If, in spite of these difficulties in treating inversion as a relation changing rule, the position that inversion in IQ changes grammatical relations is maintained, the rule which deletes accusative case must be sensitive to the fact that the inverted NPs had been subjects. The rule would be global in nature. If the assumption that inversion in IQ changes grammatical relations is not maintained, the rule of accusative deletion need not be global. A condition that the accusative NP be an object would prevent the accusative suffix from being deleted from experiencer NPs. In a relational framework, this information is readily available. At this point I will not choose between these alternatives. After discussing one of the uses of the nominalizers, I will return to inversion and its interaction with relativization.

1.5. Deverbal nouns.

The four nominalization suffixes in IQ are used to form deverbal nouns. The nominalization suffixes are fairly productive. Here I briefly illustrate deverbal noun formation for the three relativizing nominalizers and compare the resulting deverbal nouns with relative clauses. Because I am primarily interested in the interaction of relativization with rules like accusative case deletion, I have restricted my observations to transitive constructions.

The suffix -j is an agentive nominalizer, as shown in (29). The NP corresponding to the object of the nominalized verb is not usually marked with the accusative case suffix, although it can be acceptably marked accusative, as can NPs correspondings to objects of verbs nominalized with the suffixes -dur,-dura, borrowed from Spanish.

(29) a. puma-ca [jari(ta) wañu-chi-j-mi]
puma-top man(acc) die-caus-nom-val

'the puma is a man killer'

b. jari-ca [llama(ta) michi-{j / dur}-mi]
man-top llama(acc) herd-{nom / nom}-val
'the man is a llama herder'

When the NP which is the subject of the nominalized verb is present, it follows the -j nominalization. An unmarked NP preceding the nominalized verb is interpreted as the object of the verb and is not interpreted as being coreferential to the subject of the nominalized verb:

(30) a. [yacha-chi-j] warmi-ca cai-pi-mi
know-caus-nom woman-top here-loc-val

'the woman teacher is here'

b. [warmi yacha-chi-j-ca] cai-pi-mi
woman know-caus-nom-top here-loc-val

'the teacher of women is here'

In relative clauses the deletion of the accusative suffix can lead to ambiguity, although there is a strongly preferred reading in which the subject has been relativized, when the pragmatics of the context does not indicate which of the two possible readings is to be preferred. In (31) the relative clauses have definitely preferred readings. In (32) the relative clauses lack a pragmatically preferred reading. In these relative clauses, the first reading is the one in which the subject has been relativized, the rule which deletes the accusative case suffix in nominalized clauses having applied. The reading in which the object NP has been relativized, in parentheses, is rejected until an appropriate context is provided. It is interesting that in ambiguous relative clauses, the preferred reading is one in which an NP higher on the NP Accessability Hierarchy[4] is relativized, with the consequence that another rule, accusative case deletion, must have applied.

(31) a. [wawa maca-j] jari-ca cai-pi-mi
child hit-pres man-top here-loc-val

'the man who hits the child is here'

b. [jari michi-j] llama-ca cai-pi-mi
man herd-pres llama-top here-loc-val

'the llama which the man herds is here'

(32) a. [yachajuj tapu-j] padri-ca shamu-nga-mi
student ask-pres father-top come-3fut-val

'the priest who asks the student will come'
(the priest who the student asks will come)

b. [wambra maca-j] quitsa-ca cai-pi-mi ca-rca
boy hit-pres girl-top here-loc-val be-3past

'the girl who hits the boy was here'
(the girl who the boy hits was here)

I now turn to -na nominalizations. Deverbal nouns suffixed with -na are interpreted as referring to something which is suitable for carrying out the action of the verb, as in (33).

(33) a. [pullu-na-cuna-ca] puca-mi
play-nom-pl-top red-val

'the toys are red'

b. [micu-na-ca] ali-mi ca-rca
eat-nom-top good-val be-3past

'the food was good'

An unmarked NP preceding a verb nominalized with -na is generally intrepreted as the object of the verb ans as coreferential to the -na deverbal noun, as in (34)a. When an unmarked NP cannot be interpreted as the object of the nominalized verb, the construction is interpreted as referring to the object of the verb and the unmarked NP is interpreted as the subject of the nominalized verb, as in (34)b. It is not possible to force a reading in which an unmarked subject NP is coreferential to the nominalized verb, as in (34)c. This kind of ambiguity in -na deverbal constructions differs from that characteristic of -j deverbal constructions; the unmarked NP can be coreferential to the head of the -na nominalization, but not tne -j nominalization.

(34) a. [anacu awa-na-ca] puca-mi ca-nga
skirt weave-nom-top red-val be-3fut

'the woven skirt will be red'

b. [jinti awa-na-ca] puca-mi ca-nga
people weave-nom-top red-val be-3fut

'the man made woven goods will be red'

c. *[jinti awa-na-ca] charij-mi ca-nga
people weave-nom-top rich-val be-3fut

*'the people woven goods will be wealthy'

Relative clauses nominalized with -na in which an unmarked NP precedes the nominalized verb are ambiguous between a subject relativization reading, in which the rule deleting accusative case from an NP immediately preceding a nominalized verb applies, and an object relativization reading, Pragmatics often determines which reading is preferred:

(35) a. [warmi maca-na] jari-ta wañu-chi-sha
woman hit-fut man-acc die-caus-1sgfut

'I will kill the man who will hit the woman'
'I will kill the man who the woman will hit'

b. [wawa ayuda-na] quitsa-ca cai-pi-mi
child help-fut girl-top here-loc-val

'the girl who will help the baby is here'
'the girl who the baby will help is here'

I now consider a few examples of deverbal nouns formed with -shca, the third nominal used in relative clause formation. A deverbal noun suffixed with -scha is generally interpreted as the object of the verb, as in (36).

(36) a. [awa-shca-ca] cai-pi-mi
weave-nom-top here-loc-val

'the woven goods are here'

b. [randi-shca-cuna-ca] mana maimi vali-n-llu
buy-nom-pl-top neg much worth-3-negval

'the purchases are not worth very much'

When an accusative NP precedes a verb nominalized with -shca, the construction is interpreted as referring to an unspecified subject NP:

(37) [llama-ta michi-shca-ca] ri-ju-n-mi
llama-acc herd-past-top go-prog-3-val

'the one who herded llamas is going'

An unmarked NP preceding a verb nominalized with -shca can be interpreted as referring to the subject or the object of the verb. In either case the unmarked NP could be coreferential with the NP to which the nominalized verb refers. The nominalized verb in (38) is ambiguous between referring to an unspecified NP subject or the unmarked NP:

(38) [supai wañu-chi-shca-ca] maimi jatun-mi ca-rca
demon die-caus-past-top very big-val be-3past

a. 'the one who killed the demon was very big'
b. 'the demon who killed was very big'
c. 'the demon who someone killed was very big'

In past tense relative clauses an unmarked NP preceding the nominalized verb is similarly ambiguous; such an NP has either a subject or an object interpretation:

(39) [jari ricu-shca] warmi-ca cai-pi-mi
man see-past woman-top here-loc-val

a. 'the woman who saw the man is here'
b. 'the woman {who the man saw / seen by the man} is here'

It was pointed out above that in present and future tense relative clauses parallel in structure to (39), the two possible derivations for the ambiguous structure were one in which the subject is relativized and the rule which deletes the accusative case suffix from an NP immediately preceding a nominalized verb has applied or one in which the object is relativized. In addition to the possibility of the these two derivations, there is a third possible derivation for past tense relative clauses in which an unmarked NP precedes the nominalized verb will be discussed below.

Because of the convergence of past tense morphology in nominalized clauses and passive morphology, there is a passive source for unmarked NPs preceding a verb nominalized with -shca. An examination of a few examples of passive in IQ shows that both the derived passive subject and the demoted passive agent occur in nominative case. The derived passive subject triggers verb agreement on the verb ca- 'be', which may be realized as Ø. The derived passive subject is usually topicalized. This is apparently obligatory when both derived passive subject and passive agent are third person NP and both are present in the sentence:

(40) a. warmi-ca (jari) maca-shca-mi Ø
woman-top (man) hit-pass-val be-3-pres

'the woman is hit (by the man)

b. ñuca{ca) alcu cani-shca-mi ca-ni
I(top) dog bite-pass-val be-1sg.pres

'I've been bitten by the dog'

This convergence of passive derived unmarked NPs and accusative case deletion derived unmarked NPs may lead to some of the ambiguity of relative clauses nominalized with -shca. The three derivations for past tense relative clauses in which an unmarked NP immediately precedes the nominalized verb are 1) relativization of subject with accusative case deletion applying to the object immediately preceding the nominalized clause, as in (39)a; 2) relativization of object NP, as in (39)b; and 3) passivization of object and subsequent relativization of derived passive subject, as in (39)b.

1.6. Headless relative clauses, inversion, and accusative deletion.

Thus far, the discussion of relative clauses in IQ has been limited to those with surface heads or, as in the case of some nominalizations, those with unspecified heads referring to an indefinite NP. At this point I would

like to begin consideration of headless relative clauses in IQ, that is, relative clauses which have an NP coreferential to the head of the relative clause when that NP is not to the right of the nominalized verb, in relative clause head position.

In headless relative clauses the relativized NP is marked for its role in the relative clause; the nominalized verb is marked for the role of the nominalized NP in the matrix clause. This distribution of case suffixes is predicted by the fact that the nominalized verb is the rightmost nominal element of the complex NP:

(41) a. [cunan cai supai-ca jinti-cuna-ta llajta-pi
now this devil-top people-pl-acc village-loc

manlla-chi-j-ta] wañu-chi-na ca-ni
fear-caus-pres-acc die-caus-oblig be-1sg.pres

'I have to kill the devil which is frightening the people in the village'

b. [agatu-pi wawa-cuna causa-j-ca] Utavalu-man puri-j ca-rca
Agato-loc child-pl live-pres-top Otavalo-dat walk-hab be-3past

'the children who live in Agato used to walk to Otavalo'

The examples in (41) illustrate headless relativization of an NP in a present tense relative clause nominalized with -j. It is possible to headlessly relativize NPs in a past tense relative clause nominalized with -shca, but not in a future tense relative clause nominalized with -na:

(42) a. [caina-pi warmi shuj auka-wan cazara-shca-ca] maimi waka-ju-n
yesterday-loc woman one devil-inst marry-past-top much cry-prog-3

'the woman who married a devil yesterday is crying a lot'

b. *[caya-pi warmi shuj auka-wan cazara-na-ca] maimi waka-ju-n
tomorrow-loc woman one devil-inst marry-fut-top much cry-prog-3

'the woman who will marry a devil tomorrow is crying a lot'

The rule which scrambles the word order of the constituents of a clause can apply within a headless relative clause with only slightly less than acceptable results:

(43) a.?[jambidur-ta puma cani-shca-ca] wañu-nga-mi
medicine man-acc puma bite-past-top die-3fut-val

'the puma which bit the medicine man will die'

b.?buru-ca [shuj auka-wan chai warmi cazara-j-ta] ayuda-nga-mi
burro-top one devil-inst that woman marry-pres-acc help-3fut-val

'the burro will help that woman who is marrying a devil'

The examples in (41) through (43) illustrate the headless relativization of subjects in present and past tense. Although the relativized NP does not receive any special marking in the clause, the referent of the headless relative clause is clear; only subjects can be relativized headlessly, although

it is possible to relativize an NP bearing almost any grammatical relation using a relative clause with a head. The examples in (41) and (42) illustrate a further difference between relative clauses with heads and headless relative clauses. While it is possible to relativize an NP in the future tense by means of a relative clause with a head, it is not possible to headlessly relativize any NP in the future tense.

In addition to the two above mentioned restrictions on the distribution of headless relative clauses, there are others. For example, accusative experiencer NPs cannot be headlessly relativized, although nominative experiencer NPs in the desiderative construction may be headlessly relativized. This is illustrated by the contrast between (44) and (45).

(44) a.*[caina simana-pi warmi-ta maimi nana-shca] wañu-nga
last week-loc woman-acc much hurt-past die-3fut
'the woman who suffered a lot last week will die'

b. [caina simana-pi nana-shca] warmi wañu-nga
last week-loc hurt-past woman die-3fut
= (44)a.

(45) a. [caina simana-pi warmi-ca maimi puñu-naya-shca] wañu-rca
last week-loc woman-top much sleep-desid-past die-3past
'the woman who wanted to sleep a lot last week died'

b.*[caina simana-pi warmi-ta maimi puñu-naya-shca] wañu-rca
last week-loc woman-acc much sleep-desid-past die-3past
= (45)a.

c. [caina simana-pi maimi puñu-naya-shca] warmi wañu-rca
last week-loc much sleep-desid-past woman die-3past
= (45)a.

The examples in (44) and (45) illustrate another difference between relative clauses with heads and headless relative clauses. While it is not possible to headlessly relativize an accusative experiencer NP, it is possible to relativize one by means of a relative clause with a head.

These facts, together with those presented earlier regarding the inability of the rule which deletes the accusative case suffix from an NP immediately preceding a nominalized verb, bring into question the grammatical relation of inverted experiencer NPs. Because the accusative deletion rule does not treat these NPs as objects, it is necessary to either formulate accusative case deletion as a global rule or question the assumption that inversion changes the grammatical relation of experiencer subject NPs in IQ.

Under either alternative, it is necessary to refer to the case of the relativized NP, as well as the grammatical relation, in order to account for headless relative clause formation. However, the two alternatives entail different conditions on the formulation of the rules of accusative case deletion, headless relative clause formation, and experiencer NP inversion. If we no longer assume that the rule of inversion is a grammatical relation

changing rule, the rule of accusative case deletion is simple to state in terms of objects and the rule of headless relative clause formation would apply only to nominative subject NPs.[6]

In the analysis maintaining the assumption that the rule which inverts experiencer NPs is a grammatical relation changing rule, the rule of headless relative clause formation must also be sensitive to the case of the relativized NP. The rule would apply to all subjects and nominative desiderative experiencer NPs. However, this alternative is more difficult to formulate than the first alternative advanced above. The rule of headless relative clause formation would have to make special reference to those nominative NPs which were not subjects, but had been subjects. Furthermore, in order to correctly predict that, in a headless relative clause in which passive has applied, it is the derived passive subject and not the passive agent which has been relativized, the rule would have to further specify which nonsubject nominative NPs could be headlessly relativized by either referring to the rule of experiencer NP inversion or by a condition that no other nominative NP, such as a passive agent, could be present in the headless relative clause. Headless relativization of a derived passive subject is illustrated in (46):

(46) [jari-ca quitsa maca-shca] maimi fiña-nga-mi
man-top girl hit-pass much angry-3fut-val

'the man who has been hit by the girl will be very angry'

Rejection of the assumption that inversion is a grammatical relation changing rule in IQ allows the interaction of headless relativization, accusative case deletion, and inversion to be simply characterized. Maintaining this assumption leads to difficulties in the formulation of both accusative case deletion and headless relativization.[7]

Another restriction on headless relative clauses is that the accusative suffix on an object NP immediately preceding the nominalized verb cannot be deleted. Earlier it was shown that while accusative case deletion in relative clauses with heads leads to structural ambiguity, this ambiguity does not prevent the rule from applying. This contrasts with the fact that it is ungrammatical for the accusative suffix to be deleted from object NPs in headless relative clauses. This is illustrated by the difference in grammaticality between (47) and (48).

(47) a.*[jari wagra michi-j] shamu-rca
man cattle herd-pres come-3past

'the man who herds cattle came'

b.*[warmi sara yañu-shca] cai-pi-mi
woman corn cook-past here-loc-cal

'the woman who cooked corn is here'

(48) a. [wagra michi-j] jari shamu-ṛca
= (47)a.

b. [sara yañu-shca] warmi cai-pi-mi
= (47)b.

The differences which have been noted between the distribution of headless relative clauses and relative clauses with heads can now be summarized. First, while it is possible to relativize an NP bearing almost any grammatical relation with relative clauses with heads, only subjects can be headlessly relativized. Second, while it is possible to relativize in all tenses with relative clauses with heads, headless relative clauses can only occur in the present or past tense. Third, only nominative subject NPs can be relativized with the headless relative clause strategy; accusative experiencer NPs can only be relativized using relative clauses with heads. Fourth, an accusative case marker cannot be deleted from an object NP immediately preceding the nominalized verb of a headless relative clause, but can be deleted from an object NP in a relative clause with a head. In short, while there are many restrictions on the occurance of headless relative clauses, there are none on the occurrence of relative clauses with heads.

There are two possible analyses which could account for the data here. In the analysis presented in this paper, relative clauses with heads are underlying and a rule of relative clause head deletion applies optionally under certain conditions. This position will be elaborated below. In a second analysis, one proposed in Cole, et al. (1978a,b), relative clauses are underlyingly headless and a rule of NP head promotion applies to form relative clauses with heads, obligatorily under a certain set of conditions and optionally elsewhere. In the next section these two alternatives will be examined more closely.

2. Head deletion vs. head promotion.

2.1. Language internal evidence for head deletion.

In the analysis proposed in Cole, et al. (1978a,b) it is not made clear how a rule which promotes a relativized NP into relative clause head position would be formulated in order to account for the restrictions noted on the distribution of headless relative clauses. The rule could be stated as follows:

(49) Relative clause head promotion.

X	NP_i	Y	Verb+nominalizer	Δ_i	
1	2	3	4 5	6	⇒
1		3	4 5	2	

Conditions: I. Obligatory if either 1) local conditions
a. 2≠ subject or
b. 2≠ nominative or
c. 5=· [+future]
2) global condition
a. Accusative case deletion applies within the relative clause.

II. Optional otherwise.

The rule which would promote an NP into the head position of a relative clause, as formulated above, is constrained by many conditions, of both a local and global nature. It is an obligatory rule under a certain set of conditions and optional elsewhere. In the position presented here, the

rule which deletes the head of a relative clause is an optional rule, formulated as follows:

(50) Relative clause head deletion:

X	NP_i [+subject] [+nominative]	Y	Verb+nominalizer [-future]		NP_i	
						optional
1	2	3	4	5	6	=>
1	2	3	4	5	∅	

This simply formulated optional rule accounts for all of the restrictions noted above on the distribution of headless relative clauses. The condition that the relativized NP be a nominative subject accounts for the interaction between the rule inverting experiencer NPs and relative clause head deletion. By ordering the rule which deletes the accusative case suffix after relative clause head deletion, it is possible to account for the interaction of the two rules by formulating the accusative case deletion rule to be sensitive to the distinction between a headless relative clause and a nominalized sentential complement.

A comparison of the two rules show that the rule deleting the head NP in a headless relative clause, (50), is simpler to state than the rule which promotes the relativized NP into relative clause head position, (49).[8] Furthermore, the head deletion analysis predicts that relative clauses with heads will have a wider distribution than relative clauses without heads, which are further from the underlying form of relative clauses posited in this analysis. The head promotion analysis incorrectly predicts that headless relative clauses will have a wider range of distribution that relative clauses with heads. One of the unnatural consequences of the head promotion analysis is that the derived relative clauses with heads enjoys a much wider and freer distribution than the underlying headless relative clauses.

Although Cole, et al. (1978 a,b) propose that the headless relative clause analysis be extended to data from Ancash Quechua and Huanca Quechua, two Peruvian Quechua languages, their discussion centers on the IQ data. I have similarly restricted discussion to this particular Quechua language rather than attempt to deal with the problem of extremely limited access and an absence of negative evidence.[9] I have shown above that the analysis treating relative clauses as underlyingly headless is less tenable than the analysis in which relative clauses have underlying heads. Cole, et al. (1978 b:213) recognize that "head deletion predicts the alternation ... just as well as promotion does." Furthermore, the rule of relative clause head deletion can be more simply formulated than the rule of relative clause head promotion and accurately predicts that relative clauses with heads have a wider distribution than headless relative clauses. I now turn to the question of motivation for the proposal that relative clauses in English are underlyingly headless.

2.2. Relativization and English idioms.

The evidence offered in support of an analysis of English relative clauses as underlyingly headless generally centers on those relative clauses whose heads appear to be constituents of the relative clause rather than the matrix clause. The clearest example of this purported evidence is found in the cooccurrence restrictions on the parts of idioms, as in:

(51) The headway that we made was satisfactory.

(52) The strings which he pulled landed a job for her.

In the headless relative clause analysis, it is assumed that the head of relative clauses like those in (51) and (52) originates in the relative clause and not in the matrix clause; headway can appear only as the object of make, and strings can appear only as the object of pull. In the analysis in which relative clauses had heads underlyingly, the noun phrases headway and strings would originate in matrix clause, violating restrictions on the occurance of part of the idioms given in (51) and (52). Under the headless relative clause analysis, which maintains the assumption that the parts of an idiom must observe cooccurance restrictions at all times, it is not possible to generate the following grammatical sentences in which a part of the idiom in the matrix clause is relativized. In order to maintain the assumption that an idiom originates as a whole, the analysis which posits underlyingly headless relative clauses for sentences like those in (51) and (52) is forced to also allow relative clauses with heads to be underlying in order to account for the sentences in (53) and (54).

(53) The police finally made some headway which satisfied the press.

(54) He pulled the strings which got me my job.

Maintaining the assumption that certain nouns can only appear as the objects of certain verbs forces one to accept an analysis of relative clauses in English requiring two underlying structures, relative clauses with heads and relative clauses without heads. Rather than accept this conclusion, which misses the generalization that all relative clauses do have heads in English, I instead suggest that syntactic arguments based on idioms ca be viewed as unambiguously convincing for any particular analysis of relative clauses.

3. Summary and conclusions.

In this paper I discussed, first, in considerable detail, the structure of relative clauses in IQ. It was shown that while there are both relative clauses with heads and headless relative clauses in IQ, there are many restrictions on the distribution of relative clauses without heads but none on the distribution of relative clauses with heads. I then argued that a rule which optionally deletes the head of a relative clause was more simple than a rule which obligatorily promotes an NP into relative clause head position under certain conditions and optionally promotes an NP into head position elsewhere. Although Cole, et al., state that the existence of headless relatives in IQ and other Quechua languages constitutes evidence for the hypothesis advanced by Brame (n.d.) that relative clauses are underlyingly headless, the evidence for this position in English was examined and found to be contradictory; when observing cooccurrence restrictions on the distribution of parts of idioms, one is forced to posit two underlying structures for relative clauses in English, an unacceptable and unnecessary conclusion.

NOTES

* I would like to thank Carmen Chuquín for providing the data from Imbabur Quechua. I would like to express my appreciation to Georgia Green, Charles Kisseberth, Jerry Morgan, David Odden, and others with whom I have discussed

various ideas in this paper. This paper was supported by an NDFL Fellowship in Latin American Studies provided by the Latin American and Caribbean Studies Center at the University of Illinois.

[1]The orthography used here is a modification of that in Stark and Carpenter (1973); I have replaced hu with w. Abbreviations used here are: (acc)usative, (dat)ive, (loc)ative, (abla)tive, (pres)ent, (fut)ure, (prog)-ressive, (val)idation focus marker, (Q)uestion, (neg)ative, (top)ic, (1)st person, (2)nd person, (3)rd person, (sg)singular, (pl)ural, (caus)ative, (pass)ive, (desid)erative, (purp)ose, (adv)erbial, (oblig)ation construction, (hab)itual construction.

[2]In addition to the three nominalizers shown above, another suffix, -y, is used in present tense sentential complements.

[3]The causee of a causative construction can also occur in dative when the causee remains volitional (a 'let' causative). The more common construction is presented here.

[4]Keenan, Edward and B. Comrie (Noun phrase accessibility and universal grammar, Linguistic Inquiry (1977) 8.63-99).

[5]Cole, et al., (1978a:33) state that -shca may only be used to relativize direct objects headlessly. This position is modified in Cole, et al., (1978 b: 216), where it is suggested that headless relative clauses nominalized with -shca are ambiguous between a subject and direct object relativization interpretation. I have found, however, that further investigation into this question has shown both claims to be empirically incorrect. The nominalizer -shca may be used to relativize subjects headlessly, as is argued in this paper. It does not appear that objects may be headlessly relativized, regardless of nominalizer.

[6]Note that for nominative desiderative experiencer NPs a change in grammatical relations from subject to object is not reflected in the surface structure of subordinate clauses, since the rule of inversion follows case marking and subject verb agreement does not apply in subordinate clauses.

[7]Since the main thesis of this paper is concerned with the determination of restrictions on headless relative clauses in Imbabura Quechua, I have neglected to characterize the accusative experiencer constructions in what could be considered an adequate fashion. What is central to this paper is that accusative experiencer NPs cannot be headlessly relativized, regardless of their grammatical relation. It is hoped that a more accurate view of the nature of accusative experiencer constructions will emerge upon further investigation.

[8]As formulated (50) optionally derives headless relative clauses. I assume the rule of zero pronominalization, attested elsewhere in the grammar of Imbabura Quechua, to delete the relativized NP in relative clauses with heads. Because (49) is obligatory under four nonconjoined conditions, three local and one global, and optional otherwise, it is not possible to formulate the conditions on (49) in a manner similar to that in (50).

[9]Cole, et al., cite evidence from Cerrón-Palomino (1976) that -sha (cognate with IQ -shca) is used in headless relativization of subjects and objects in Huanca Quechua. However, neither Cole, et al., nor Cerrón-Palomino offer an explanation for the fact that in the purported object relativization, the subject of the relative clause is in genitive case. This fact brings into question the grammatical relation of the relativized NP. The occurrence of the relativized NP in nominative case is assumed to be an instance of an obligatory rule of accusative case deletion in subordinate clauses in Huanca. An alternative analysis might argue that the relativized NP is a derived subject which is the head of a possessive construction. At this time the issue is open to speculation. The data from Ancash illustrates great variety in relative clause surface forms. Cole, et al., decline to provide an analysis, stating that "although it is possible to establish that some relative clauses are headless in Ancash, it is not possible on the basis of what we know to determine the distribution of the construction,"(1978a:37). This representing their position, they have presented no argument for the underlying structure of headless relative clauses in Ancash Quechua.

REFERENCES

BRAME, M. n.d. A new analysis of the relative clause: evidence for an interpretative theory. Unpublished manuscript.

CERRÓN-PALOMINO, R. 1976. Gramática Quechua Junín-Huanca. Ministerio de Educación. Lima, Peru.

COLE, P. and W. Harbert, G. Hermon. 1978a. Headless relative clauses in Quechua. Studies in the Linguistic Sciences 8:26-41.

COLE, P. and W. Harbert, G. Hermon. 1978b. Relatives without heads: evidence from Quechua. Cunyforum 5-6:201-217.

COLE, P. and J. Jake. 1978. Accusative subjects in Imbabura Quechua. Studies in the Linguistic Sciences 8:72-96.

KEENAN, E. 1976. Towards a universal definition of 'subject'. Subject and Topic, ed. by Charles Li. Academic Press.

KEENAN, E. and B. Comrie. 1977. Noun phrase accessibility and universal grammar. Linguistic Inguiry 8:63-99.

STARK, L. and L. Carpenter. 1973. El Quichua de Imbabura: una grammática pedagógica. Instituto Interandino de Desarrollo. Otavalo, Ecuador.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

RAISING IN KIPSIGIS*

Janice Jake and David Odden

In this paper, we shall present evidence for the existence of two rules which raise NPs out of embedded sentential complement clauses into higher clauses in Kipsigis. It will be shown that both of these Raising rules apply cyclically, and that the rule raising an NP out of a sentential subject complement clause violates the condition proposed by Chomsky (1977) that all cyclic rules must obey Subjacency. We shall also present evidence arguing that certain morphosyntactic coding properties must be ordered within the cycle, applying between cyclic rules. In the first section, we outline certain morphosyntactic properties characteristic of NPs in Kipsigis. In the following section, it is argued that NPs may be raised out of sentential object complement clauses and assume the grammatical relation of Object of the higher clause. In the third section, we argue that NPs may be raised out of sentential Subject complement clauses and assumes the grammatical relation of Subject of the higher clause. The possibility of these two promotions is predicted by the Relational Succession Law (Postal and Perlmutter (1974)) of Relational Grammar. We consider and reject the possibility of treating the two rules Object Complement Raising and Subject Complement Raising as outputs of the same transformation, a generalized rule of raising. Finally, in the last section, we return to the question of the cyclic nature of the Verb Agreement and Subject Tone Marking rules and their interaction with Passive.

1. Morphosyntactic Coding Properties

In Kipsigis, a VSO language, the Subject is coded on the verb with a set of verbal agreement prefixes. Two related conjugations are used for Subject-Verb agreement in main clauses and Subject-Verb agreement in subordinate clauses, shown in (1a) and (1b), respectively.

(1) a. Main Clause Prefixes

á - tíl - é
1s-cut-prog.
'I'm cutting'

í - tíl - é
2s-cut-prog.
'you're cutting'

tîl - é
cut-prog.
'he/she/it's cutting'
'they're cutting'

b. Subordinate Clause Prefixes

à - tîl
1s - cut
'that I cut'

ì: - tîl
2s-cut
'that you cut'

kɔ̀ - tîl
3-cut
'that he/she/it cuts'
'that they cut'

kí -tíl - é	kè: - tîl
1p-cut-prog.	1p-cut
'we're cutting'	'that we cut'
ó - tíl - é	ò: - tîl
2p-cut-prog.	2p-cut
'you're (pl) cutting'	'that you (pl) cut'

In most instances, there is no overt distinction between the third person singular and plural form of the verb. However, there are distinct stems employed for most adjectives and verbs of motion, reflecting the difference between singular and plural Subjects. In this case, an overt distinction between 3 singular and 3 plural is manifested on the surface. We illustrate this point below using the singular and plural stems of the adjective 'nice' and the verb 'run'.

(2)	kárâ:rán	'nice (sing)'	kórô:ròn	'nice (pl.)'
	lópòtì	'he is running'	rwâyè	'they are running'

Objects are coded on the verb by a set of distinct suffixes shown in (3), where a third person Object is unmarked.

(3)	kà -tíl - ân	kà - tíl - ê:c
	past-cut-1sing.Obj.	past-cut-1pl.Obj.
	'he cut me'	'he cut us'
	kà -tíl - în	kà - tíl - â:k
	past-cut-2sing.Obj.	past-cut-2pl.Obj
	'he cut you(sing.)'	'he cut you(pl.)'

An Object which is coreferential to the subject of the clause undergoes Reflexivization and is manifested as the reflexive suffix -kê, shown in (4).

(4)	ká:	- tìl - kê	kà - tíl- kê	Mù:sa
	past+1sing.Subj	- cut - ref.	past-cut-ref.	Musa(S)
	'I cut myself'		'Musa cut himself'	
	ké:	- tìl - kê	kà - tíl- kê	kwò:nyì:k
	past+2sing.Subj	- cut - ref.	past-cut-ref.	women(S)
	'you cut yourself'		'the women cut themselves'	

Another property which is characteristic of Subject NPs in Kipsigis is that they are marked with a special tonal pattern, providing they are not preposed to preverbal position. The tone which is borne by a Subject NP contrasts with the tone which that NP bears in isolation. The tone borne by an NP in isolation or citation form is identical to the tone of a nonsubject NP and to the tone of a Subject NP which has been topicalized. Owing to relatively free postverbal word order, a Subject may appear in a position preceding or following an Object without affecting the tone borne by the Subject NP. The examples in (5) illustrate the distinction between Subject and Object tone; in addition, these examples illustrate the application of a Scrambling rule which allows Subject and Object to appear in any word order after the verb.

(5) a. Mû:sà 'Musa' Kìplàŋàt 'Kiplangat'

b. lɔ́pɔ̀tì Mù:sá lɔ́pɔ̀tì Kíplàŋàt
running Musa(S) running Kiplangat(S)
'Musa is running' 'Kiplangat is running'

c. kàtîl Mù:sá Kìplàŋàt (VSO)
cut Musa(S) Kiplangat
'Musa cut Kiplangat'

kàtîl Kìplàŋàt Mù:sá (VOS)
cut Kiplangat Musa(S)
'Musa cut Kiplangat'

d. kàtîl Kíplàŋàt Mû:sà (VSO)
cut Kiplangat(S) Musa
'Kiplangat cut Musa'

kàtîl Mû:sà Kíplàŋàt (VOS)
cut Musa Kiplangat(S)
'Kiplangat cut Musa'

These data clearly show that the process which marks NPs with Subject tone depends on grammatical relations and not strictly on surface word order.

In the example (6a) below , the Subject is not marked with Subject tone, since it stands in preverbal position. Nevertheless, the lack of Subject tone on the NP which follows the verb indicates that since the postverbal NP is not the Subject, the topicalized NP is the Subject. NPs which are terms such as Subject, Direct Object, Beneficiary and Instrumental can be preposed. The morpheme kɔ occurrs between the preposed NP and the verb. Only one NP can be topicalized in a sentence, as shown in in (6e,f).

(6) a. Kìplàŋàt kɔ́ - kà -tíl pè:ndɔ́
Kiplangat top-past-cut meat
'Kiplangat cut the meat' (SVO) [1]

b. pè:ndɔ́ kɔ́ - kà -tíl Kíplàŋàt
meat top-past-cut Kiplangat(S)
'Kiplangat cut the meat' (OVS)

c. cì:tɔ́ kɔ́ - kà -tíl-cì Kíplàŋàt pè:ndɔ́
man top-past-cut-ben Kiplangat(S) meat
'Kiplangat cut the meat for the man' (Ben VSO)

d. ák rô:twé:t kɔ́ - kà -tíl Kíplàŋàt pè:ndɔ́
with knife top-past-cut Kiplangat(S) meat
'Kiplangat cut the meat with a knife' (Instr VSO)

e. *Kìplàŋàt pè:ndɔ́ kɔ́kàtîl
Kiplangat meat cut (SOV)

f. *pè:ndɔ́ Kìplàŋàt kɔ́kàtîl
meat Kiplangat cut (OSV)

Thus, although Subject tone marking is sensitive to grammatical relations, it must also be sensitive to word order.

2. Raising out of Sentential Object Complements

We shall now bring into consideration evidence for a rule which raises an NP out of a sentential Object complement and makes that NP the Object of the higher clause. In general, sentential Object complement clauses appear in the same position in the higher clause as a simple Object NP, i.e. after the matrix Subject. The complementizer ɔ̀lè may optionally precede the complement clause, dependent on the nature of the higher verb. We shall not discuss the presence or absence of the complementizer here, since its presence or absence does not affect the application of the raising rules. In (7a) below, the verb -mac 'want' is followed by a sentential Object complement. The Subject of the lower clause, Kíplàŋàt, is marked with Subject tone and follows the verb of the complement clause. In (7b), the NP Kìplàŋàt has undergone Raising into the higher clause. It now bears nonsubject tone and stands before the embedded verb. This derived Object may precede the higher Subject, as in (7c), clearly demonstrating that the former Subject of the embedded clause has become a constituent of the higher clause.

(7) a. mɔ́cè Mù:sá [kɔ̀lápát Kíplàŋàt]
wants Musa(S) run Kiplangat(S)
'Musa wants Kiplangat to run'

b. mɔ́cè Mù:sá Kìplàŋàt [kɔ̀lápát ___]
wants Musa(S) Kiplangat run
'Musa wants Kiplangat to run'

c. mɔ́cè Kìplàŋàt Mù:sá [kɔ̀lápát ___]
wants Kiplangat Musa(S) run
'Musa wants Kiplangat to run'

The alternation between Subject in an embedded clause and Object in a higher clause then constitutes prima facia evidence for a rule raising a Subject out of a sentential Object complement into higher Object position. [2]

The application of Raising to an embedded first or second person pronominal Subject provides additional evidence that the raised NP bears the grammatical relation of Object to the higher verb. In (8b), the former Subject of the lower clause appears as an Object suffix on the higher verb once it undergoes Raising.

(8) a. mɔ́cè Mù:sá [à - lápát]
wants Musa(S) 1s.Sub-run
'Musa wants that I run'

b. mɔ́cɔ́:n Mù:sá [à-lápát]
wants-1s.Obj. Musa(S) 1s.Sub-run
'Musa wants me to run'

Note that in (8b), although the Subject of the lower clause has been raised into Object position of the higher clause, it nevertheless

governs Subject-Verb agreement in the lower clause. We shall argue that both Raising and Verb-Agreement are cyclic in Kipsigis in later portions of this paper.

If the higher Subject is coreferential to the lower Subject, Reflexivization will apply to the Object derived by application of Raising, as shown in (9). The application of Reflexivization, a clause-bounded rule, again illustrates that the NP which has undergone Raising must be a constituent of the higher clause and that it bears the relation Object in the higher clause.

(9) a. ɔ́ -mɔ́c -é [à -lápát]
1s.Sub-want-prog. 1s.Sub-run
'I want that I run'

ɔ́ -mɔ̀kcínì-kɛ̂ [à -lápát]
1s.Sub-want -reflex. 1s.Sub-run
'I want myself to run'

b. mɔ́cè Mù:sá [kɔ̀ -lápát]
wants Musa(S) 3s.Sub-run
'Musa wants that he run'

mɔ́kcìn-kɛ̂ Mù:sá [kɔ̀ -lápát]
wants -reflex. Musa(S) 3s.Sub-run
'Musa wants himself to run'

We have thus provided evidence for a rule which raises the Subject NP of a lower clause out of that clause, bringing it into the higher clause, where it bears the grammatical relation Object. As we shall discuss in greater detail below, Raising is governed by a wide variety of higher verbs, including -mac 'want', -yay 'make', and -ri:p 'watch'. An identical range of facts is encountered for any of these verbs selecting sentential Object complement clauses. The data in (10) below illustrate that a similar range of alternations exists for the aforementioned verbs as well.

(10) a. kà -yây Mù:sá [kɔ̀ -tíl Kíplàŋàt pè:ndɔ́]
past-made Musa(S) 3s.Sub-cut Kiplangat(S) meat
'Musa made that Kiplangat cut the meat'

kà -yây Mù:sá Kìplàŋàt [kɔ̀ -tíl] pè:ndɔ́]
past-made Musa(S) Kiplangat 3s.Sub-cut meat
'Musa made Kiplangat cut the meat'

kà -yây Kìplàŋàt Mù:sá [kɔ̀ -tíl] pè:ndɔ́]
past-made Kiplangat Musa(S) 3s.Sub-cut meat
'Musa made Kiplangat cut the meat'

kà -yây Mù:sá [à -tíl pè:ndɔ́]
past-made Musa(S) 1s.Sub-cut meat
'Musa made that I cut the meat'

kà -yáy -ân Mù:sá [à -tíl pè:ndɔ́]
past-made-1s.Obj Musa(S) 1s.Sub-cut meat
'Musa made me cut the meat'

b. rî:pé Mù:sá [kɔ̀ -tíl Kíplàŋàt pè:ndɔ́]
sees Musa(S) 3s.Sub-cut Kiplangat(S) meat
'Musa sees that Kiplangat cut the meat'

rî:pé Mù:sá Kìplàŋàt [kɔ̀ -tíl ____ pè:ndɔ́]
sees Musa(S) Kiplangat 3s.Sub-cut meat
'Musa sees that Kiplangat cut the meat'

rî:pé Kìplàŋàt Mù:sá [kɔ̀ -tíl ____ pè:ndɔ́]
sees Kiplangat Musa(S) 3s.Sub-cut meat
'Musa sees that Kiplangat cut the meat'

rî:pé Mù:sá [à -tíl pè:ndɔ́]
sees Musa(S) 1s.Sub-cut meat
'Musa sees that I cut the meat'

rî:p-ɔ́:n Mù:sá [à -tíl pè:ndɔ́]
sees-1s.Obj Musa(S) 1s.Sub-cut meat
'Musa sees that I cut the meat'

It is also possible to raise an Object NP out of the lower clause into higher Object position, as shown in (11). The Object of that higher clause derived by application of Raising satisfies all of the tests of higher objecthood and constituency. In (11b), the lower Object has been raised out of a sentential Object complement clause into the higher clause. This NP is a constituent of the higher clause, as demonstrated by the fact that it can precede the matrix Subject in (11c).

(11) a. mɔ́cè Mù:sá [kɔ̀ -tíl Kíplàŋàt pè:ndɔ́]
wants Musa(S) 3s.Sub-cut Kiplangat(S) meat
'Musa wants that Kiplangat cut the meat'

b. mɔ́cè Mù:sá pè:ndɔ́ [kɔ̀ tíl Kíplàŋàt ____]
wants Musa(S) meat 3s.Sub-cut Kiplangat(S)
'Musa wants that Kiplangat cut the meat'

c. mɔ́cè pè:ndɔ́ Mù:sá [kɔ̀ -tíl Kíplàŋàt ____]
wants meat Musa(S) 3s.Sub-cut Kiplangat(S)
'Musa wants that Kiplangat cut the meat'

When a first or second person pronominal Object is raised into higher Object position, it will trigger Object-Verb agreement on the higher verb as well as triggering Object-Verb agreement on the verb of the clause out of which it is raised, as shown in (12). Likewise, raising a lower Object NP which is coreferential to the higher Subject triggers application of Reflexivization, as shown in (13). Thus, pronominal Objects of Object Complement clauses satisfy all of the tests of objecthood in the higher clause subsequent to application of Raising.

(12) a. mɔ́cè Mù:sá [kɔ̀ -tìl-án Kíplàŋàt]
wants Musa(S) 3s.Sub-cut-1s.Obj. Kiplangat(S)
'Musa wants that Kiplangat cut me'

b. mɔ́c -ɔ́:n Mù:sá [kɔ̀ -tìl-án Kíplàŋàt]
want-1s.Obj Musa(S) 3s.Sub-cut-1s.Obj. Kiplangat
'Musa wants that Kiplangat cut me'

(13) a. ɔ́ -mɔ́cé [kɔ̀ -tìl-án Kíplàŋàt]
1s.Sub-want 3s.Sub-cut-1s.Obj Kiplangat(S)
'I want Kiplangat to cut me'

b. ɔ́ -mɔ̀kcínì-kɛ̂ [kɔ̀ -tìl-án Kíplàŋàt]
1s.Sub-want -reflex. 3s.Sub-cut-1s.Obj Kiplangat
'I want Kiplangat to cut me'

In addition to Direct Objects, Beneficiary and Instrumental NPs can be raised into higher Object position, as shown in (14) and (15).

(14) a. mɔ́cè Mù:sá [kɔ̀ -tìl-cí Kíplàŋàt cì:tɔ́ pè:ndɔ́]
wants Musa(S) 3s.Sub-cut-ben. Kiplangat(S) man meat
'Musa wants that Kiplangat cut the meat for the man'

b. mɔ́cè Mù:sá cì:tɔ́[kɔ̀ -tìl-cí Kíplàŋàt pè:ndɔ́]
wants Musa(S) man 3s.Sub-cut-ben. Kiplangat(S) meat
'Musa wants that Kiplangat cut the meat for the man'

(15) a. mɔ́cè Mù:sá [kɔ̀ -tìl-é:n Kíplàŋàt rô:twé:t pè:ndɔ́]
wants Musa(S) 3s.Sub-cut-inst. Kiplangat(S) knife meat
'Musa wants that Kiplangat cut the meat with a knife'

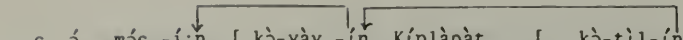
b. mɔ́cè Mù:sá rô:twé:t [kɔ̀ -tìl-é:n Kíplàŋàt pè:ndɔ́]
wants Musa(S) knife 3s.Sub-cut-inst. Kiplangat(S) meat
'Musa wants that Kiplangat cut the meat with a knife'

We have observed above that both Subject-Verb agreement and Object-Verb agreement must apply prior to application of Raising, since an embedded verb must agree with the NP which eventually is removed from that clause by application of Raising, as shown in (12b). However, verb agreement also applies after Raising, as shown by the fact that the higher verb bears Object agreement triggered by the derived Object. Thus, verb agreement precedes Raising and Raising precedes verb agreement; according to the standard principles of linear ordering, verb agreement must therefore be cyclic. [4]

A similar argument can be advanced that Raising must be cyclic, since an NP may be raised out of a lower clause into a higher clause and assumes the relation Object in that clause. That derived Object may also undergo Raising into the highest clause by application of Raising on the last cycle.

(16) a. ɔ́ -mɔ́cé [kɔ̀ -yây Kíplàŋàt [kɔ̀ -tìl-ín Mù:sá]]
1s.Sub-want 3s.Sub-make Kiplangat(S) 3s.Sub-cut-2s.Obj Musa(S)
'I want that Kiplangat make that Musa cut you'

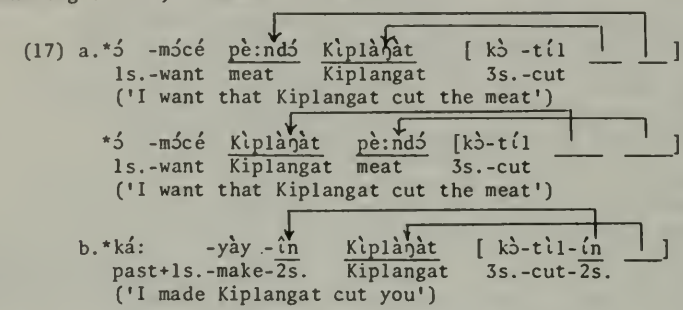
b. ɔ́ -mɔ́cé [kɔ̀ -yày -în Kíplàŋàt [kɔ̀ -tìl-ín Mù:sá]]
1s.Sub-want 3s.Sub-make-2s. Kiplangat(S) 3s.S-cut-2s. Mu:sa(S)
'I want that Kiplangat make that Musa cut you'



c. ɔ́ -mɔ́c -í:n [kɔ̀-yày -ín Kíplàŋàt [kɔ̀-tìl-ín Mù:sá]]
1s.-want-2s. 3s.-make-2s. Kiplangat(S) 3s.-cut-2s. Musa(S)
'I want that Kiplangat make that Musa cut you'

In the derivation of (16), Raising precedes verb agreement in the intermediate clause, and in the highest clause, the second application of Raising also feeds verb agreement. We conclude therefore that Raising applies cyclically.

Although either a lower Subject or nonsubject may undergo Raising, it is impossible to raise both a Subject and an Object into the immediately dominating clause, as demonstrated below.



(17) a.*ɔ́ -mɔ́cé pè:ndɔ́ Kìplàŋàt [kɔ̀ -tíl ___ ___]
1s.-want meat Kiplangat 3s.-cut
('I want that Kiplangat cut the meat')

*ɔ́ -mɔ́cé Kìplàŋàt pè:ndɔ́ [kɔ̀-tíl ___ ___]
1s.-want Kiplangat meat 3s.-cut
('I want that Kiplangat cut the meat')

b.*ká: -yày -ín Kìplàŋàt [kɔ̀-tìl-ín ___]
past+1s.-make-2s. Kiplangat 3s.-cut-2s.
('I made Kiplangat cut you')

The application of Object Complement Raising must therefore be constrained so that application of that rule to one NP of the lower clause prevents any other NP from being raised into the higher clause. We shall refer to this constraint as the No Double Raising Constraint.

There are numerous avenues open for stating this constraint. One method of constraining the application of Raising is to claim that when an NP is raised out of a sentential complement clause, that clause is reduced in grammatical status to a chômeur. If an NP may not be raised out of a chômeur, then no other NP contained in that clause may be raised. This hypothesis is advanced in Postal and Perlmutter (1974). An alternative method of constraining the application of Raising appears to us to be more intimately connected with the fundamental claims of a Relational Grammar account of syntax. Specifically, we claim that once the Object position of the higher clause is filled by application of Raising, that position cannot be filled again by application of Raising. Following the discussion of Sentential Subject Complement Raising, we shall return to the No Double Raising Constraint, and shall show that the second alternative is supported over the first alternative.

We shall now consider evidence indicating that the two apparent Raising rules, Subject-to-Object Raising and Object-to-Object Raising, are instances of the same rule, rather than two distinct rules in Kipsigis.[5] First, we note that both rules which raise an NP from a sentential Object complement must obey Subjacency, i.e. they may raise an NP out of the clause immediately dominated by the governing verb. This is shown by the fact that it is impossible to raise one NP out of the lower clause into a clause more than one higher cyclic node.

An NP may appear separated on the surface from its original source
y an intermediate clause. However, that NP must undergo Raising twice,
orresponding to each clause through which it passes. The cyclic
nteraction of verb agreement and Raising clearly demonstrates that the NP
hich appears in the highest clause in (16c) has passed through the
ntermediate clause. The Subjacency restriction on Object Complement Raising
s demonstrated by the fact that verb agreement is obligatory on the intermediate
lause. If the lower NP were to undergo Raising directly into the highest
lause, verb agreement would not apply to the verb of the intermediate clause.
hus, the ungrammaticality of (18a,b) demonstrates that Object-to-Object
aising and Subject-to-Object Raising are both subject to Subjacency.

(18) a.* ɔ́-mɔ́c -ín:n [kɔ̀ -yáy Mù:sá [kɔ̀ -tɪ̀l-ín Kíplàŋàt]]
1s.-want-2s. 3s.-make Musa(S) 3s.-cut-2s. Kiplangat(S)
('I want that Musa make Kiplangat cut you')

*ɔ́ -mɔ́c -ín:n [kɔ̀ -yáy Mù:sá [ì: -tɪ̀l pè:ndɔ́]]
1s.-want-2s. 3s.-make Musa(S) 2s.-cut meat
('I want that Musa make you cut the meat')

ince, as we shall demonstrate below, not every cyclic rule is subject to
ubjacency, the fact that both Object-to-Object Raising and Subject-to-Object
aising are constrained to obey Subjacency constitutes an arguement that these
ules are identical.

The second arguement that Object-to-Object Raising and Subject-to-Object
aising are subject to Subjacency is based on the previously mentioned restriction
hat only one NP may be raised into the immediately dominating clause.
pplication of Raising to one NP of the lowest clause prevents subsequent
pplication of Raising of any other NP out of that clause into a higher
bject complement clause.

(19) a.*ká: -yày Mû:sà [kɔ̀-mác Kíplàŋàt pè:ndɔ́ [kɔ̀ -tíl ___ ___]]
past+1s.-make Musa 3s.-want Kiplangat(S) meat 3s.-cut
('I made Kiplangat want Musa to cut the meat')

*ká: -yày pè:ndɔ́[kɔ̀-mác Kíplàŋàt Mû:sà [kɔ̀-tíl ___ ___]]
past+1s.-make meat 3s.-want Kiplangat(S) Musa 3s.-cut
('I made Kiplangat want Musa to cut the meat')

Object pronouns and full lexical NPs behave identically with respect
o this restriction on the application of Object Complement Raising.

(20) a.*ɔ́ -mɔ́cé Mû:sà [kɔ̀ -yày -ín Kíplàŋàt [kɔ̀ -tɪ̀l-ín ___]]
1s.-want Musa 3s.-make-2s. Kiplangat(S) 3s.-cut-2s.
('I want that Kiplangat make Musa cut you')

b.*ɔ́ -mɔ́cé Mû:sà [kɔ̀ -yày -ín Kíplàŋàt [ì: -tɪ̀l ___]]
1s.-want Musa 3s.-make-2s. Kiplangat(S) 2s-cut
('I want that Kiplangat make you cut Musa')

c.* ɔ́ -móc -ín:n [kɔ̀ -yáy Kíplàŋàt Mû:sà [kɔ̀-tìl-ín]]
1s.-want-2s. 3s.-make Kiplangat(S) Musa 3s.-cut-2s.
('I want that Kiplangat make Musa cut you')

d.*ɔ́ -móc -ín:n [kɔ̀ -yáy Kíplàŋàt Mû:sà [ì:-tìl]]
1s.-want-2s. 3s.-make Kiplangat(S) Musa 2s.-cut
('I want that Kiplangat make you cut Musa')

The restriction which we observe on Object Complement Raising is a consequence of the fact that Object Complement Raising is constrained to obey Subjacency in conjunction with the fact that only one NP may be raised out of an Object complement clause into the immediately dominating clause.

The second indication that the rules Object-to-Object Raising and Subject-to Object Raising is a single rule rather than two separate phenomena is the fact that the class of predicates governing raising of lower Subject and nonsubject NPs into higher Object position is identical. Verbs of perception, cognition, judgement, desire and causation, and in general, any verb selecting a sentential Object complement, will govern raising of NPs into higher Object position. Examples of the verbs -mac 'want' and -yay 'make' have been employed above illustrating the fact that these verbs govern both Object-to-Object Raising and Subject-to-Object Raising. A sampling of additional verbs governing both processes is provided below.

(21) a.ɔ́:nkèn ɔ̀lè kɔ̀tíl Kíplàŋàt pè:ndɔ́
1s.-know comp 3s.-cut Kiplangat(S) meat
'I know that Kiplangat cut the meat'

b.ɔ́:nkèn Kìplàŋàt ɔ̀lè kɔ̀tíl pè:ndɔ́
1s.-know Kiplangat comp 3s.-cut meat
=(a)

c.ɔ́:nkèn p:èndɔ́ ɔ̀lè kɔ̀tíl Kíplàŋàt
1s.-know meat comp 3s.-cut Kiplangat(S)
=(a)

(22) a.rî:pé Mù:sá kɔ̀tíl Kíplàŋàt pè:ndɔ́
see Musa(S) 3s.-cut Kiplangat(S) meat
'Musa sees Kiplangat cut the meat'

b.rî:pé Mù:sá Kìplàŋàt kɔ̀tíl pè:ndɔ́
see Musa(S) Kiplangat 3s.-cut meat
=(a)

c.rî:pé Mù:sá pè:ndɔ́ kɔ̀tíl Kíplàŋàt
see Musa(S) meat ɔs.-cut Kiplangat(S)
=(a)

(23) a.ámɔ̀:ŋû ɔ̀lè kɔ̀tíl Kíplàŋàt pè:ndɔ́
1s.-expect comp 3s.-cut Kiplangat(S) meat
'I expect Kiplangat to cut the meat'

b.ámɔ̀:ŋû Kìplàŋàt ɔ̀lè kɔ̀tíl pè:ndɔ́
1s.-expect Kiplangat comp 3s.-cut meat
=(a)

(23) c.ámɔ̀:ŋû pè:ndɔ́ ɔ̀lè kɔ̀tí1 Kíplàŋàt
1s.-expect meat comp 3s.-cut Kiplangat(S)
=(a)

Our argument that the class of verbs governing both varieties of Raising is identical is strengthened by the fact that both processes show the same idiosyncratic restrictions. The verb -mwa-'say(to)' allows neither lower Subjects nor nonsubjects to be raised, although the verb -le- 'tell' does allow application of Raising to lower subjects and nonsubjects alike.

(24) a. Unraised version.

{kɔ́:lé:ncì / kɔ́:mwɔ́:cì} Kìplàŋàt ɔ̀lè kɔ̀tí1 Mù:sá pè:ndɔ́
past-1s.{-say to / -tell} Kiplangat comp 3s.-cut Musa(S) meat
'I {said to / told} Kiplangat that Musa cut the meat'

b. Raising of lower Subject.

{kɔ́:lé:ncì / kɔ́:mwɔ́:cì} Kìplàŋàt Mû:sà ɔ̀lè kɔ̀tí1 pè:ndɔ́
past-1s.{-say to / -tell} Kiplangat Musa comp 3s.-cut meat
=(a)

c. Raising of lower Object.

{kɔ́:lé:ncì / kɔ́:mwɔ́:cì} Kìplàŋàt pè:ndɔ́ ɔ̀lè kɔ̀tí1 Mù:sá
past-1s.{-say to / -tell} Kiplangat meat comp 3s.-cut Musa(S)
=(a)

If Subject-to-Object Raising and Object-to-Object Raising are viewed as a unified process then the idiosyncratic restriction on the governing class of both rules need be stated only once. We thus propose the following general rule to account for the various processes of Object Complement Raising discussed above:

(25) Object Complement Raising: Optionally raise a term out of an Object Complement Clause.
Conditions: subject to Subjacency, not governed by the verb -mwa-.

Although Raising out of Sentential Object Complements in English may only apply to lower Subjects, there are other languages besides Kipsigis in which Object Complement Raising applies to NPs bearing grammatical relations other than Subject. In each of the cases of which we are aware, the governing class of Subject-to-Object Raising is identical to the governing class of Object-to-Object Raising. Furthermore, all rules of Object Complement Raising which we have encountered are universally subject to Subjacency. For example, in Imbabura Quechua, a highland Ecuadorian Quechua language,

a parallel set of alternations is encountered. In (26) below, the sentential Object complement is nominalized with the present tense nominalizer -y and is marked with the accusative case suffix -ta. The underlying unraised sentence is given as (26a). In (26b), the lower Subject has been raised into higher Object position, in (26c), the lower Object has been raised into higher Object position, and in (26d), the lower Indirect Object has been raised into higher Object position. In each of these examples illustrating application of Raising, the derived higher Object is marked with the accusative suffix -ta and appears outside of the embedded clause. We observe that any term of the lower clause may undergo Raising and appear as the Object the higher clause, just as we have shown in Kipsigis that any term may undergo Raising and appear in the higher clause as the Object of that clause. [6]

(26)a.chai jari-ca cri -n[yachachij warmi-man wawa-ta cara -ju -y -ta
that man-top believe-3 teacher woman-dat baby-acc serve-prog-pres-acc
'The man believes the teacher is giving the woman the baby'

b.chai jarica yachachij-ta crin [warmiman wawata carajuyta]
that man teacher -acc believes woman baby serves
'The man believes the teacher is giving the woman the baby'

c.chai jarica wawa-ta crin [yachachij warmiman carajuyta]
that man baby-ac believes teacher woman serves
'The man believes the teacher is giving the woman the baby'

d.chai jarica warmi-ta crin [yachachij wawata carajuyta]
that man woman-ac believes teacher baby serves
'The man believes the teacher is giving the woman the baby'

Further evidence that Raising has applied in (26b-d) is the fact that these derived Objects can undergo Passivization and appear as the surface Subject, as shown in (27).

(27)a.yachachij-ca jari cri -shca-mi [warmiman wawata carajuyta]
teacher -top man believe-pass-valid.woman baby serves
'The teacher is believed by the man to be giving the woman the baby'

b.wawa-ca jari cri -shca-mi [yachachij warmiman carajuyta]
baby-top man believe-pass-valid. teacher woman serves
=(26c)

c.warmi-ca jari cri -shca-mi [yachachij wawata carajuyta]
woman-top man believe-pass-valid. teacher baby serves
=(26d)

David Weber (1978,1979) also observes that Raising out of Object complement clauses into higher Object position applies to both lower Subjects and Objects in the Llacón dialect of Huánuco Quechua, a Quechua I language spoken in Peru. In Nandi, a Kalenjin language or dialect very closely related to Kipsigis, Creider (1979) reports parallel data to the Kipsigis data presented here. Certain Bantu languages allow Raising of both Subject and Object NPs out of sentential Object complements into higher Object position. Kisseberth and Marshad (in progress) observe that in the Kiamu dialect of Swahili, nonsubjects as well as Subjects can be raised into higher Object

position. Therefore, although Object Complement Raising does not apply to nonsubject NPs of the lower clause in English, that possibility is available and is exploited in a variety of languages.

3. Raising out of Sentential Subject Complements

In the preceding section, we have argued for the existence of a general rule raising a term out of a sentential Object complement clause into higher Object position of the higher clause, subject to Subjacency. We shall now consider evidence arguing for a rule raising an NP out of sentential Subject complement clauses. A sentential Subject complement clause will appear in typical subject position, i.e. immediately following the matrix verb. No complementizer is present, and the matrix verb selects unmarked 3rd. person singular agreement when the sentential Subject complement clause serves as the subject of that predicate. All predicates selecting sentential Subject complement such as wɔy 'tough' or maka:t 'necessary' are intransitive.

Kipsigis presents a variety of processes raising NPs out of sentential Subject complements. In each case, the derived Subject satisfies every test of Subjecthood in the higher clause. For example,the Object of a clause embedded under the verb wɔy 'tough' may undergo Raising into higher Subject position by a rule analogous to Tough Movement in English. We observe below that an NP appearing within the embedded clause bearing the relation Object in that clause, as shown by its tone, will appear within the higher clause and bears Subject tone subsequent to application of Raising.

(28) a. wôy [kɔ̀-tíl Mù:sá pè:ndɔ́]
hard 3s-cut Musa(S) meat
'It is hard for Musa to cut the meat'

b. wôy pè:ndɔ́ [kɔ̀-tíl Mù:sá ___]
hard meat(S) 3s-cut Musa(S)
'The meat is hard for Musa to cut'

In (29) below, a plural Object NP is raised; that derived Subject triggers verb agreement on the higher predicate by requiring selection of the plural stem wɔ́yèn of the higher predicate.

(29) a. wôy [kɔ̀-tíl Mù:sá pànyé:k]
hard 3s-cut Musa(S) meat(pl)
'It is hard for Musa to cut the meats'

b. wɔ́yèn pànyɛ̀:k [kɔ̀-tíl Mù:sá ___]
hard(pl) meat(pl)(S) 3s-cut Musa(S)
'The meats are hard for Musa to cut'

A first or second person pronominal Object NP which is raised into higher Subject position will control Object-Verb agreement in the lower clause, as well as triggering Subject-Verb agreement in the higher clause. As indicated in the preceding section, this fact is explainable by the cyclic application of both rules of Verb Agreement.

(30) a. wûy [kɔ̀-màs -á:k Mù:sá]
hard 3s-beat-2pl Musa(S)
'It's hard for Musa to beat you(pl)'

b. ɔ̀ -wúyèn [kɔ̀-màs -á:k Mù:sá]
2p-hard(pl) 3s-beat-2pl Musa(S)
'You(pl) are hard for Musa to beat'

It is also possible to raise Beneficiary and Instrumental NPs out of sentential Subject complements, as illustrated in (31).

(31) a. wûy [kɔ̀-tìl-é:n Mù:sá pè:ndɔ́ rô:tó:k]
hard 3s-cut-instr. Musa(S) meat knives
'It's hard for Musa to cut the meat with the knives'

wúyèn rò:tô:k [kɔ̀-tìl-én Mù:sá pè:ndɔ́ ____]
hard(pl) knives(S) 3s-cut-instr. Musa(S) meat
'The knives are hard for Musa to cut the meat with'

b. wûy [kɔ̀-tìl-cí Mù:sá pè:ndɔ́ kwɔ̀:nyík]
hard 3s-cut-ben. Musa(S) meat women
'It's hard for Musa to cut the meat for the women'

wúyèn kwɔ̀:nyìk[kɔ̀-tìl-cí Mù:sá pè:ndɔ́ ____]
hard(pl) women(S)
'The women are hard for Musa to cut the meat for'

Thus, Kipsigis presents alternations in the position of an NP similar to those in English accounted for by the rule Tough Movement.

The process raising Object NPs out of sentential Subject complement clauses in Kipsigis is unlike English, however, in that the class of verbs governing that phenomenon is the entire class of verbs selecting sentential Subject complements. While only a limited class of verbs in English allow Tough Movement (i.e. Raising of embedded nonsubjects), there are no such limitations on the class of verbs governing sentential Subject raising in Kipsigis. Thus, verbs such as wûy 'tough', rɔ̀ísì 'easy', nyɔ̂lú 'necessary -tɛsta 'continue' all govern optional application of Raising of nonsubject NPs in Kipsigis.

(32)a. nyɔ̂lú[kw-âm Kíplàŋàt pànyɛ́:k]
need 3s-eat Kiplangat(S) meat(pl)
'It is necessary that Kiplangat eat the meats'

nyɔ́lúnɔ̂:tí:n pànyɛ̀:k [kw-âm Kíplàŋàt ____]
ńéed (pl) meats(S) 3s-eat Kiplangat
'It is necessary that Kiplangat eat the meats'

b. rɔ̀ísì [kɔ̀-tíl Mù:sá pànyɛ́:k]
easy 3s-cut Musa(S) meat(pl)
'It is easy for Musa to cut the meats'

rɔ̀ísì pànyɛ́:k [kɔ̀-tíl Mù:sá ___]
easy meats(S) 3s-cut Musa(S)
'The meats are easy for Musa to cut'

c. kà -tɛ́stâ [kɔ̀-tíl Mù:sá pànyɛ́:k]
past-continue 3s-cut Musa(S) meats
'Musa continued to cut the meats'

kà -tɛ́stâ pànyɛ́:k [kɔ̀-tíl Mù:sá ___]
past-continue meats(S) 3s-cut Musa(S)
'Musa continued to cut the meats'

kà -tɛ́stâ [kɔ̀-màs -ín Mù:sá]
past-continue 3s-beat-2s Musa(S)
'Musa continued to beat you'

kɛ́: -tɛ̀stâ [kɔ̀-màs -ín Mù:sá]
past+2s-continue 3s-beat-2s Musa(S)
'Musa continued to beat you'

It is also possible to apply this process of Raising to Subject NPs of the embedded clause as well, analogous the the rule Subject-to-Subject Raising in English. The derived matrix Subject will trigger Subject-Verb agreement in the higher clause and will be marked with Subject tone, demonstrating its constituency in the higher clause.

(33) a. nyɔ̂lú [kɔ̀-más kwɔ̀:ndɔ̀ Mû:sà]
necessary 3s-beat woman(S) Musa
'It is necessary for the woman to beat Musa'

nyɔ̂lú kwɔ̀:ndɔ̀ [kɔ̀-más ___ Mû:sà]
necessary woman(S) 3s-beat Musa
'It is necessary for the woman to beat Musa'

b. wɔ̂y [kɔ̀-tíl kwɔ̀:nyìk pè:ndɔ́]
hard 3s-cut women(S) meat
'It is hard for the women to cut meat'

wɔ́yèn kwɔ̀:nyìk[kɔ̀-tíl ___ pè:ndɔ́]
hard(pl) women(S) 3s-cut meat
'It is hard for the women to cut the meat'

Application of Raising to the embedded first or second person pronominal Subject of the sentential Subject complement raises that NP into the higher clause, where it controls Subject-Verb agreement. In addition, that NP triggers Subject-Verb agreement on the lower verb, which is the expected result of our hypothesis that verb agreement applies cyclically in conjunction with the fact that (as we shall demonstrate), Subject Complement Raising applies cyclically. The following examples illustrate the application of Raising to embedded pronominal Subject NPs.

(34) a.nyɔ̂lú [ɔ̀:-tìl pè:ndɔ́]
necessary 2p-cut meat
'It is necessary for you(pl) to cut meat'

ɔ̀ -nyɔ́lúnɔ̂:tí:n [ɔ̀:-tìl pè:ndɔ́]
2p-necessary(pl) 2p-cut meat
'It is necessary for you(pl) to cut the meat'

b.wûy [kè:-más Kìplàŋàt]
hard 1p-beat Kiplangat
'It is hard for us to beat Kiplangat'

kì-wúyèn [kè:-más Kìplàŋàt]
1p-hard(pl) 1p-beat Kiplangat
'It's hard for us to beat Kiplangat'

We have observed in the preceding section that, according to the No Double Raising Constraint, Object Complement Raising may apply to raise only one NP out of the lower clause into the higher clause. This restriction blocks application of Object Complement Raising to two NPs of the lower clause if both NPs are to appear in the same clause subsequent to application of Raising. The same restriction must be observed for the rule raising an NP out of a sentential Subject complement clause, since two NPs may not be raised into the same higher clause by that rule.

(35) a.*ɔ̀ -nyɔ́lúnɔ̂:tí:n pànyè:k [ɔ̀:-tíl]
2p-necessary meats(S) 2p-cut
('It is necessary for you(pl) to cut the meats'

b.*wûy Kíplàŋàt Mù:sá [kɔ̀-más]
hard Kiplangat(S) Mu:sa(S) 3s-beat
('It is hard for Musa to beat Kiplangat')

As pointed out earlier, two explanations for this restriction are available; according to one explanation, application of Raising to a clause places that clause en chomage, blocking further application of Raising to that clause. According to the alternative explanation, application of Raising to one NP of a clause fills the relational position held by the complement clause in the higher clause, thus blocking subsequent reapplication of Raising into that clause.

Application of Subject Complement Raising may feed itself, as is demanded under the hypothesis that this rule applies cyclically. Thus, an NP which originates in a lower clause may undergo Subject Complement Raising into the higher clause on the second cycle and will become the Subject of that clause. That derived Subject NP may then undergo a second application of Subject Complement Raising into the highest clause on the last cycle. The fact that the derived Subject of the higher clause has undergone application of Raising twice is demonstrated by the fact that that NP triggers application of Verb Agreement on the intermediate clause.

(36) a. kàtéstâ [kɔ̀nyɔ́lú [kɔ̀tɪ̀l Kíplàŋàt pànyé:k]]
3-past-continue 3-necessary 3-cut Kiplangat(S) meat-pl
'it continued to be necessary for Kiplangat to cut the meat(pl)'

b. kàtéstâ [kɔ̀nyɔ́lúnɔ̂:tí:n pànyè:k [kɔ̀tɪ̀l Kíplàŋàt]]
3-past-continue 3-pl-necessary meat-pl(S) 3-cut Kiplangat(S)
=(a).

c. kàtéstâ pànyè:k [kɔ̀nyɔ́lúnɔ̂:tí:n[kɔ̀tɪ̀l Kíplàŋàt]]
3-past-continue meat-pl(S) 3-pl-necessary 3-cut Kiplangat(S)
=(a).

(37) a. kàtéstâ [kɔ̀nyɔ́lú [ì:tɪ̀l pànyé:k]]
3-past-continue 3-necessary 2s-cut meat-pl
'it continued to be necessary for you to cut the meat(pl)'

b. kàtéstâ [ì:nyɔ́lú [ì:tɪ̀l pànyé:k]]
3-past-continue 2s-necessary 2s-cut meat(pl)
=(a).

c. ké:tèstâ [ì:nyɔ́lú [ì:tɪ̀l pànyé:k]]
past-2s-continue 2s-necessary 2s-cut meat-pl
=(a).

We observe from these examples that the derived subject of the highest clause has been raised into the lower clause, as demonstrated by the fact verb agreement applies to the verb of that intermediate clause.

The process raising an NP out of a sentential Subject complement interacts with Object Complement Raising, since an Object NP derived by application of Object Complement Raising may undergo Subject Complement Raising and become the subject of the highest clause. The fact that the embedded verb -mac- 'want' bears Object verb agreement coreferential with the derived Subject NP demonstrates that Object Complement Raising has applied on the second cycle raising the underlying Subject or Object of the lowest clause into the next highest clause.

(38) a. nyɔ́lú [kɔ̀yáy Kíplàŋàt [ì:tɪ̀l pè:ndɔ́]]
3-necessary 3-make Kiplangat(S) 2s-cut meat
'it is necessary for Kiplangat to make you cut the meat'

b. nyɔ́lu' [kɔ̀yàyín Kíplàŋàt [ì:tɪ̀l pè:ndɔ́]]
3-necessary 3-make-2s Kiplangat(S) 2s-cut meat
=(a).

c. ìnyɔ́lú [kɔ̀yàyín Kíplàŋàt [ì:tɪ̀l pè:ndɔ́]]
2s-necessary 3-make-2s Kiplangat(S) 2s-cut meat
=(a).

(39) a. nyɔ́lú [kɔ̀yáy Kíplàŋàt [kɔ̀tɪ̀lín Mù:sá]]
3-necessary 3-make Kiplangat(S) 3-cut-2s Musa(S)
'it is necessary for Kiplangat to make Musa cut you'

(39) b. nyɔ̂lú [kɔ̀yàyín Kíplàŋàt [kɔ̀tìlín Mù:sá]]
3-necessary 3-make-2s Kiplangat(S) 3-cut-2s Musa(S)
=(a).

c. ìnyɔ̂lú [kɔ̀yàyín Kíplàŋàt [kɔ̀tìlín Mù:sá]]
2s-necessary 3-make-2s Kiplangat(S) 3-cut-2s Musa(S)
=(a).

Our hypothesis that Object Complement Raising and Subject Complement Raising are cyclic rules predicts that application of one raising rule may feed application of the other raising rule. The fact that application of Object Complement Raising feeds application of Subject Complement Raising confirms this hypothesis.

These rules also interact in such a way that a Subject NP derived by application of Subject Complement Raising on one cycle may undergo Object Complement Raising on the highest cycle. We observe below that an NP which originates in the lowest clause will trigger verb agreement on the verb of that clause. On the next cycle, that NP may undergo Subject Complement Raising and become the derived Subject of that clause; it will trigger verb agreement on the verb of the intermediate clause. That NP may subsequently undergo Object Complement Raising and become the derived Object NP of the highest clause.

(40) a. ká:yày [kɔ̀tɛ̀stâ [kɔ̀màsín Kíplàŋàt]]
past-1s-make 3continue 3-hit-2s Kiplangat(S)
'I made Kiplangat's hitting you continue'

b. ká:yày [ìtéstâ [kɔ̀màsín Kíplàŋàt]]
past-1s-make 2s-continue 3-hit-2s Kiplangat(S)
=(a)

c. ká:yàyîn [ìtéstâ [kɔ̀màsín Kíplàŋàt]]
past-1s=make-2s 2s-continue 3-hit-2s Kiplangat(S)
=(a).

(42) a. ká:yày [kɔ̀tɛ̀stâ [ìmàs Kìplàŋàt]]
past-1s-make 3-continue 2s-cut Kiplangat
'I made your cutting Kiplangat continue'

b. ká:yày [ìtéstâ [ìmàs Kìplàŋàt]]
past-1s-make 2s-continue 2s-cut Kiplangat
=(a).

c. ká:yàyîn [ìtéstâ [ìmàs Kìplàŋàt]]
past-1s-make-2s 2s-continue 2s-cut Kiplangat
=(a).

We have thus shown that Object Complement Raising is subject to Subjacency. We also demonstrated that the rule of Subject Complement Raising may obey Subjacency; i.e., it may apply to raise an NP out of the immediately dominated complement. A significant difference between Object Complement Raising and Subject Complement Raising developes in this respect, namely that

Subject Complement Raising may violate Subjacency by raising an NP into the highest clause out of the lowest clause without that NP having been raised into the intermediate clause, as shown below.

(43) a.kà -téstâ [kɔ̀-nyɔ̂lú [kɔ̀-màs -án Kíplàŋàt]]
past-continue 3-necessary 3 -beat-1s Kiplangat(S)
'It continued for it to be necessary for Kiplangat to beat me'

ká: -tèstâ [kɔ̀-nyɔ̂lú [kɔ̀ -màs -án Kíplàŋàt]]
past+1s-continue 3-necessary 3 -beat-1s Kiplangat(S)
'It continued for it to be necessary for Kiplangat to beat me'

b.wôy [kɔ̀-tèstâ [à-más Kìplàŋàt]]
hard 3-continue 1s-beat Kiplangat
'It is hard for me to continue beating Kiplangat'

à -wôy [kɔ̀-tèstâ [à-más Kìplàŋàt]]
1s-hard 3 -continue 1s-beat Kiplangat
'It is hard for me to continue beating Kiplangat'

In the derivation of these sentences, Subject Complement Raising does not apply on the second cycle and the verb of the intermediate clause does not receive first person verb agreement. On the highest cycle, Subject Complement Raising applies to an NP contained in the lowest clause which is dominated by the highest predicate and raises that NP into Subject position of the highest clause. We shall henceforth refer to raising out of a clause not immediately dominated by the governing verb as unbounded raising. Subject Complement Raising is therefore not constrained to observe Subjacency, since it may apply in an unbounded fashion.

Additional evidence is available that Subject Complement Raising is not constrained by Subjacency. It is possible to apply Subject Complement Raising to one NP of the lowest clause on the second cycle, and to then apply Subject Complement Raising to a different NP of the lowest clause on the highest cycle, raising that NP in an unbounded fashion into the highest clause.

(44) a. wôy [kɔ̀-nyɔ̂lú [ì:-tìl-án]]
hard 3 -necessary 2s-cut-1s
'It is hard for it to be necessary for you to cut me'

ì -wôy [à-nyɔ̂lú [ì:-tìl-án]]
2s-hard 1s-necessary 2s-cut-1s
'It is hard for it to be necessary for you to cut me'

b. wôy [kɔ̀-nyɔ̂lú [kɔ̀-más Kíplàŋàt Mû:sà]]
hard 3 -necessary 3 -beat Kiplangat(S) Musa
'It is hard for it to be necessary for Kiplangat to cut Musa'

wôy Kíplàŋàt [kɔ̀-nyɔ̂lú Mûsá [kɔ̀-más ___ ___]]
hard Kiplangat(S)3-necessary Musa(S) 3 beat
'It is hard for it to be necessary for Kiplangat to cut Musa'

Subject Complement Raising may also apply in an unbounded fashion to an NP of the lowest clause which is itself an Object complement clause to which Object Complement Raising has previously applied on the second cycle.

(45)a. wôy Kíplàŋàt [kɔ̀-yáy Mù:sá pè:ndɔ́[kɔ̀-tíl]]
hard Kiplangat(S) 3 -make Musa(S) meat 3 -cut
'It is hard for Musa to make Kiplangat cut the meat'

b. ì -nyɔ̂lú [kɔ̀-màc -áŋ Kíplàŋàt [à-màs-ìn]]
2s-necessary 3 -want-1s Kiplangat(S) 1s-beat-2s
'It is necessary that Kiplangat want that I beat you'

We have earlier pointed out that both Object Complement Raising and Subject Complement Raising are constrained by the No Double Raising Constraint so that only one NP may be raised into the immediately dominating clause. We must conclude on the basis of this constraint that the derived subject NP of the highest clause in (45a,b) and (44) cannot have been a constituent of the intermediate clauses . Therefore, Subject Complement Raising must be allowed to apply in an unbounded fashion in these examples.

We are now provided with the crucial empirical evidence supporting one of the two previously mentioned universal explanations for the No Double Raising Constraint. Under the hypothesis that application of Raising to an NP of a clause places that clause en chomage, we expect that raising one NP out of a clause will prevent application of any raising rule to any other NP of that clause, under all circumstances. This has been shown to be false, since an NP may be raised out of a clause which is purportedly a chomeur, just in case that NP is raised into an unfilled relational position of the highest clause. We therefore conclude that the correct explanation for the No Double Raising Constraint is the fact that an NP raised into a higher clause fills the relational position held by that clause, and that two NPs of a clause may not bear the same grammatical relation. This conclusion is also supported by the interaction of Tough Movement and Subject-to-Object Raising in English: application of Subject-to-Object Raising on the second cycle does not disallow application of Tough Movement to the Object NP of the lowest clause.

(46) Sue is hard for Mary to expect John to kiss

Throughout the preceding discussion, we have shown that significant similarities exist between the process raising Subject NPs out of sentential Subject complement clauses and the process raising nonsubjects out of sentential Subject complement clauses; both rules are cyclic, both rules may apply in an unbounded fashion, the class of predicates governing one process is identical to the class of predicates governing the other process. We are aware of no differences between these processes which would prevent their expression as a single rule. We therefore propose the following rule to account for raising of Subject and nonsubject NPs out of sentential Subject complements.

(47) Subject Complement Raising : Optionally raise a term out of a sentential Subject complement clause. (Not subject to Subjacency)

Despite the fact that the class of predicates governing Subject-to-Subject Raising and Tough Movement in English are nonintersecting, Kipsigis does not stand alone in allowing the same verbs to govern raising of embedded Subjects and nonsubjects alike. In the Kiamu dialect of Swahili, Kisseberth and Marshad(in progress) report that one class of predicates governs raising of both Subjects and nonsubjects out of sentential Subject complement clauses. James (1979) reports for James Bay Cree that the same class of predicates governs raising of Subject and nonsubject NPs out of sentential Subject complement clauses. She notes, rather interestingly, that the rule which raises an NP out of a sentential Subject complement clause is not subject to Subjacency in that language; this same result was argued for in Kipsigis in the preceding section.

In summary, we have argued for two Raising rules in Kipsigis, one raising a term from a sentential Subject complement clause which is not subject to Subjacency, and another raising a term from a sentential Object complement clause, which is constrained by Subjacency. Both rules were shown to apply cyclically, and are constrained by the principle that the application of Raising into a clause fills up the relational position held by the embedded clause out of which that NP is raised.

4. Passive and Verb Agreement

In this section, we turn to additional data bearing on the question of Verb Agreement. It was demonstrated in the preceding section that Verb Agreement must be cyclic, since it both precedes and follows the cyclic rules Object Complement Raising and Subject Complement Raising. Verb Agreement also interacts with another cyclic rule of Kipsigis, Passive.

As a preliminary, we observe that the passive form of the verb is marker with the prefix kɪ- in a main clause or kɛ:- in a subordinate clause.

(48) kà -kí -tîl pè:ndɔ́ Mù:sá
past-pass-cut meat Musa(S)
'The meat was cut by Musa'

ɔ́ -mɔ́cé [kɛ̀:-tíl pè:ndɔ́ Mù:sá]
1s-want pass-cut meat Musa(S)
'I want the meat to be cut by Musa'

kɛ́: -kì -tìl-ân
past+2s-pass-cut-1s
'I was cut by you'

The surface grammatical relations borne by the NPs of these examples are not clearly demonstrated by any of the morphological tests for Subject and Objects. For example, the passive agent continues to trigger Subject-Verb agreement, and is marked on the surface with Subject tone. The derived passive Subject continues to bear the morphological characteristics of nonsubject NPs;i.e. it bears nonsubject tone and controls Object-Verb agreement. These morphological coding properties superficially suggest that Passive in Kipsigis does not change grammatical relations. However, syntactic behavioral properties clearly demonstrate that Passive in Kipsigis is in fact a relation changing rule.

In the first section of this paper, we showed that Subject, Object and Oblique NPs may be topicalized into preverbal position. Rather strikingly, in a passive sentence, only the underlying Object may be preposed and not the underlying Subject.

(49) a. pè:ndɔ́ kɔ́-kà -kí -tîl Mù:sá
meat top-past-pass-cut Musa(S)
'The meat was cut by Musa'

b. *Mû:sà kɔ́-kà- kí -tîl pè:ndɔ́
Musa top-past-pass-cut meat
('The meat was cut by Musa')

In this respect, the underlying Subject NP behaves as though it has undergone a demotion in grammatical relation to chômeur status, similar to the behavior of demoted passive agents in other languages , in so far as it cannot undergo syntactic processes, such as Topicalization, as freely as terms may.

We have also shown that NPs may be raised into Object position out of sentential Object complement clauses and into Subject position out of sentential Subject complement clauses. However, if a Subject has been demoted to chômeur status by application of the Passive rule, it is not available to undergo the rules Object Complement Raising and Subject Complement Raising. As shown in (50)below, the derived passive Subject may freely undergo both rules of raising, but the passive agent may not be raised by either rule.

(50) a. ɔ́ -mɔ́cé pè:ndɔ́ [kè:-tíl Kíplàŋàt]
1s-want meat pass-cut Kiplangat(S)
'I want the meat to be cut by Kiplangat'

*ɔ́ -mɔ́cé Kìplàŋàt [kè:-tíl pè:ndɔ́]
1s-want Kiplangat pass-cut meat
('I want that the meat be cut by Kiplangat')

Another rule which demonstrates that passive agents are demoted in grammatical status to chômeurs is the rule NP Relativization. In Kipsigis, any NP bearing a grammatical relation higher than Genetive may undergo relativization, while Genetive NPs may not undergo relativization. As predicted by the NP Accessability Hierarchy, the demoted Subject which we argue to be a chômeur cannot be relativized. In contrast, the derived passive Subject is freely available for relativization.

(51) a. kɔ̂y kwɔ̀:ndɔ̀ [né-kà -kí -màs cì:tɔ̀]
tall woman(S) rel-past-pass-hit man(S)
'The woman who was hit by the may is tall'

b.*kɔ̂y cì:tɔ̀ [né-kà -kí -màs kwɔ̀:ndɔ́]
tall man(S) rel-past-pass-hit woman
('The man who the woman was hit by is tall')

Thus, four rules, Topicalization, Object Complement Raising, Subject Complement Raising and Relativization are blocked from applying to passive agents, strongly supporting our claim that Passive in Kipsigis demotes

Subjects to chômeurs.

We have demonstrated that the Passive rule of Kipsigis must in fact change grammatical relations. However, it might be legitimately asked whether the Passive rule of Kipsigis embodies both demotion of Subject and promotion of Objects, or whether that rule contains only the Subject demotion element. In the typical case of a demotion-only passive, the underlying Subject is demoted to chômeur status, but no Object is promoted to fill the vacant Subject slot. In all cases of which we are are aware, passive rules involving only demotion universally apply either to clauses containing an intransitive verb, or, more rarely, to both clauses with transitive and intransitive verbs. We know of no demotion-only passive attested where demotion only applies to the Subject of a transitive verb. Rather, restricting application of passive to Subjects of transitive verbs is typical of English type passives, where the underlying Object is promoted to Subject position as well. The passive rule of Kipsigis must be restricted so that it only applies to the Subject of a transitive verb, and may not demote the Subject of an intransitive verb.

(52) *kà -kí -lápát Mù:sá
kast-pass-run Musa(S)
('Musa ran')

This restriction on Passive receives an explanation only under the assumption that Passive incorporates a promotion of the Object as well.

The rule of Passive must apply in a lower clause prior to application of either rule of Raising; as we have pointed out earlier, the demoted agent deriving from application of Passive cannot undergo Raising. Since Passive must precede a cyclic rule, Passive either applies cyclicly or precyclicly.

We have also demonstrated that within the clause where Passive applies, the various morphosyntactic coding properties such as Subject Verb Agreement, Object Verb Agreement, and Case Marking do not reflect the derived grammatical relations, but rather reflect grammatical relations prior to application of Passive. Therefore, these three morphosyntactic coding rules must apply before Passive. Since Verb Agreement is a cyclic rule, this leads to the conclusion that Passive is cyclic or postcyclic. Since we have demonstrated that Passive must be cyclic or precyclic above, we conclude that Passive must be cyclic.

4. Conclusions

In this paper, we have described two cyclic rules which raise NPs out of sentential complement clauses. We have shown that an NP may be raised out of a sentential Object complement clause into higher Object position of the immediately dominating clause, and that this rule is subject to Subjacency. We have also shown that a second rule raises an NP out of a sentential Subject complement clause into higher Subject position. This rule is distinct from the rule Object Complement Raising, since Subject Complement Raising may apply in an unbounded manner.

These processes of Raising are of theoretical significance, since they constitute two separate counterexamples to the general claims advanced in Chomsky (1977). It is proposed there that all cyclic rules are subject to

Subjacency, and that no element may be moved from a cyclic category (except into COMP) when there is in addition to that element a 'specified' Subject. We observe that the first condition is violated by the Kipsigis Subject Complement Raising rule, which need not apply in a bounded manner. The second condition, the Specified Subject Condition, is violated by both Subject Complement Raising and Object Complement Raising, where it is possible to move an Object out of a clause which contains a 'specified' Subject. We conclude therefore that the conditions on grammar proposed in Chomsky (1977) are false.

On the other hand, the theory of Relational Grammar is given empirical support by the fact that the demoted Subject resulting from application of Passive is not available to undergo either Subject Complement Raising or Object Complement Raising. In a syntactic theory which refers solely to linear order and dominance relations, there is no non-ad hoc way to distinguish between the demoted Passive agent and any other unmarked NP of the sentence, such as the Object. Consequently, such a theory will be unable to correctly restrict Object Complement Raising, Subject Complement Raising, Topicalization or Relativization from applying to the demoted passive agent. The theory of Relational Grammar claims that the primitive categories to which syntactic rules refer are grammatical relations, which need not have a one-to-one correspondence with linear order or dominance relations. The categories linear order and dominance relation are insufficient for describing the restrictions on the application of these syntactic rules in Kipsigis, whereas reference to the distinction between term and non-term is sufficient for describing these phenomena. Therefore, the theory of Relational Grammar, which makes this distinction readily available, is strongly supported by the facts of Kipsigis grammar.

NOTES

* Research for this paper was carried out during the year 1978-79 and was partially supported by an NDFL Fellowship in Latin American Studies (Jake) and African Studies (Odden). Kipsigis is a member of the Kalenjin language family, which forms a part of the Nilotic subgroup of Nilo-Saharan. It is closely related to Nandi,with which it is claimed to be mutually intelligible.The two languages are nevertheless distinct. We would like to thank our consultant Matthew Kirui for providing us with these data, and to thank Chuck Kisseberth, Jerry Morgan, Georgia Green, Alice Davison, Colin Ford, Kathryn Hodges, Chet Creider, Eyamba Bokamba and the members of the Field Methods class for helpful comments and criticisms. Comments and criticisms from R.M.R. Hall, Beatrice Hall, Gerry Dalgish and others offered at the Tenth Annual Conference on African Linguistics are gratefully acknowledged. All errors are naturally our own.

[1] One might claim that sentences like (6a) have no surface Subject. There is no independent evidence that preposed NPs are nonterms. In addition, the demoted Subject deriving from application of Passive appears only on the right of the verb and cannot undergo preposing. The decision to state Subject Tone Marking in terms of word order in addition to grammatical relations does not bear crucially on the remainder of the analysis.

[2]The constructions which we represent here as involving raising are not to be confused the structurally distinct relative clauses or purpose clauses. Relative clause have the structure NP [relative [$_S$]] and purpose clauses have the structure S[àsí [$_S$]] , as in (i) and (ii)

(i) kɔ̂y kwɔ̀:ndɔ̀ [nɛ̀ [lɔ́pɔ̀tì]]
tall woman rel running
'The woman who is running is tall'

(ii) kà -yɔ̂y pè:ndɔ́[àsí [ɔ́:mé]]
past-boil meat in order to ls+eat
'He boiled meat in order for me to eat'

[3] The literal English glosses provided throughout this paper will at times be only approximate. We have concentrated on preserving the fundamental Subject and Object relations in our glosses, sacrificing the stylistic and pragmatic nuances associated with application versus nonapplication of the Raising rules. This sacrifice is particularly necessary when the literal English equivalent is ungrammatical in English (but not in Kipsigis), viz. *Musa wants me that Kiplangat cut.

[4]It is immaterial whether application of verb agreement actually inserts morphological material or merely marks the verb with an abstract syntactic marker as selecting an Object suffix, nor is there any empirical consequence of applying verb agreement in the cycle, rather than applying verb agreement postcyclically but refering globally to the same point in the cycle where we claim that verb agreement applies.

[5]Sheintuch (1977) has indicated that the notion 'same rule' encounters significant difficulties. We shall not attempt to resolve these problems here; rather, we shall argue for the unity of Object Complement Raising by demonstrating that Object-to-Object Raising and Subject-to-Object Raising have a number of properties in common, including the same peculiar restriction on the class of verbs governing application of Raising. We are aware of no dissimilarities between the two processes which would argue for a nonunitary account of Object Complement Raising.

[6]Full details and arguements for the generalized rule of Object Complement Raising in Imbabura Quechua are set forth in Jake (in progress).

REFERENCES

CHOMSKY,Noam. 1977. On WH-movement. In P.Culicover, T. Wasow and A.Akmajian, eds.: Formal syntax. New York:Academic Press.

CREIDER,C. 1979. A syntactic sketch of Nandi. In E. Keenan, ed.: Studies in verb initial languages (forthcoming).

JAKE,J. in progress. On the role of chomeurs in Imbabura Quechua syntax. Ph.D. dissertation, University of Illinois.

JAMES,D. 1979. On raising to subject in James Bay Cree. in Montreal working papers in linguistics 12.

KISSEBERTH,C. and H. Marshad. in progress. Aspects of Ki-Amu syntax.

POSTAL,P. and D. Perlmutter. 1974. Notes on relational grammar.

SHEINTUCH,G. 1977. Same rule in a transformational theory of syntax. Ph.D. dissertation, University of Illinois.

WEBER,D. 1978. Comments on passive in Quechua. MS: UCLA.

WEBER,D. 1979. Notes on mechanisms that restrict coreference in Quechua. Paper read at 2nd annual conference on Andean linguistics.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

PRAGMATICS AND VERB SERIALIZATION IN HINDI-URDU

Yamuna Kachru

This paper examines the existing descriptions of the compound or serial verbal constructions in Hindi-Urdu to demonstrate that a purely syntactic-semantic description of the data is inadequate. An appeal to pragmatics is essential to give an adequate account of the phenomenon. This study, thus, adds to the growing body of evidence that supports the view that pragmatics plays an important role in linguistic descriptions.

1.0 In recent years, a number of studies have appeared that support a view of linguistic descriptions in which sentences are viewed as events or acts rather than as objects (Morgan 1975). An event or act takes place in a setting and the setting is important in interpreting the event or act involved. Similarly, the setting, or pragmatics, of a sentence is relevant to the interpretation of the sentence. A number of studies have shown that language data that can not be accounted for in straightforward syntactic-semantic terms can be accounted for in terms of pragmatics (Corum 1975, Freeman 1976, Morgan 1978, among others). In all descriptions of compound or serial verbs in Hindi-Urdu, attempts have been made to account for the phenomenon either in purely formal terms (Burton-Page 1957) or in terms of both formal and semantic properties of the constructions (Bahl 1957, Hacker 1958, 1961, Hook 1974, Kachru 1965, 1966, 1978, Shapiro 1974, Sinha 1972, among others), and yet there is a feeling that the account is not satisfactory. In this paper, I will demonstrate that an account of serial verbs in purely syntactic-semantic terms is inadequate; an appeal to pragmatics is essential to describe the phenomenon in Hindi-Urdu as well as other South Asian languages. Thus, this study adds to the growing body of evidence supporting the role of pragmatics in linguistic descriptions.

The following sentences illustrate what is meant by compound or serial verbs in Hindi-Urdu:[1]

1. baccā gir gayā
   child fell went
   The child fell down.

2. rāj ne ciṭṭhī paṛh lī
   Raj ag. letter read took
   Raj read the letter (to himself).

3. rāj ne ciṭṭhi paṛh dī
   Raj ag. letter read gave
   Raj read the letter out loud (for some audience).

4. Shobhā ne nibandh likh ḍālā
   Shobha ag. paper write poured
   Shobha wrote the paper (to get it over with).

Several things are clear from the above examples and their glosses and translations in English. First, it is clear that the above sequences of verbs are not mere sequences of verbs, i.e., both the verbs in the sequence do not have independent status. Secondly, it is clear that the second verb is subordinated to the first verb in meaning, i.e., the first verb retains its lexical meaning whereas the second verb loses it. The second verb, however, is not meaningless, it contributes in a specific way to the meaning of the sequence. For example, in 1-3 above, the second verbs involved have an intensive, a self-benefactive, and a benefactive meaning respectively. In the rest of this paper, I will refer to the verb sequence as 'serial verb', the first verb as 'main verb' and the second verb as 'explicator verb'.

I will proceed as follows. I will first describe the nature of the construction, then discuss the substantive proposals put forward in existing descriptions and finally demonstrate the relevance of pragmatic principles in accounting for the phenomenon adequately.

2.0 I shall not go into the details of controversies with regard to the exact number of explicator verbs, the morphological shapes that the main verb can have, etc. All these questions have been discussed in detail in traditional grammars (Kellogg 1875, Guru 1922, among others) and more recent descriptions of the language (Bahl 1967, Hook 1974, Kachru 1965, 1966, McGregor 1972, among others). I am basically concerned with a set of verbs which are universally accepted as explicator verbs such as

5. ānā 'come', jānā 'go', lenā 'take', denā 'give', uṭhnā 'rise', baiṭhnā 'sit', paṛnā 'fall', and ḍālnā 'pour'.

I will mainly concentrate on ānā 'come', jānā 'go', and lenā 'take' in this study. I will, however, bring in other explicator verbs, some of which are more restricted in their use, to strengthen the points I wish to make.

3.0 The following facts have been observed about the serial verbal constructions. One, there are cooccurrence restrictions between the main and the explicator verbs. Two, they do not occur freely in certain syntactic environments. For instance, they normally do not occur in negative sentences. In fact, their non-occurrence in negative sentences has been used as defining criterion to separate serial verbs from other verb sequences not only in Hindi-Urdu but also in other South Asian languages. Three, they do not passivize in Hindi-Urdu. Four, in certain syntactic environments, it is obligatory to use a serial verb rather than a simple verb. Two clear cases of such environments are said to be the intensive and the extent clause.[2] Five, although the serial verbs do not normally occur in negative sentences, Gaeffke 1967 lists a number of constructions in which a serial verb occurs with the negative particles na, nahĩ, or mat.[3] Six, the explicator verbs are said to add the following types of meanings to the main verb: according to Kellogg 1875, their meaning is primarily intensive whereas according to Guru 1922, it is primarily definitive (avdhāraṇbodhak). Most European linguists (Hacker 1958, Porizka 1967-69,

among others) argue that it is primarily aspectual, it indicates completion of the action or process expressed by the main verb. According to Bahl 1967 and Shapiro 1974, serial verbs fall into different groups according to whether they have an aspectual, explicative or amplifying meaning, or they function as fixed idioms. In my recent papers, I have argued that in addition to intensive, definitive, aspectual, and explicative meaning, they also indicate speaker intentions, judgements, and attitudes (Kachru 1976, 1978). In this paper I will concentrate on elaborating this last kind of meaning. In order to do so, I will illustrate the use of explicators listed in 6 below. According to the works mentioned above, the classes of main verbs that these explicators select and the meanings they convey are as follows (other explicators and their meanings are listed in the Appendix):

6.	ānā 'come'	occurs with intransitive verbs of motion and indicates that the action of the main verb is oriented toward a focal point. This focal point may be a person, or it may be set in time or space.
	jānā 'go'	occurs with (a) intransitive change of state verbs, including motion verbs and indicates motion away from the focal point, (b) certain dative subject verbs and expresses definitive meaning, and (c) certain transitive verbs and indicates hurried, impulsive action.
	lenā 'take'	occurs with (a) ingestive (transitive) verbs and indicates completive meaning, (b) other types of transitive verbs and indicates self-benefactive meaning, and (c) certain intransitive verbs (meaning not specified).

The sentences in 6-8 exemplify the use of the explicator verbs ānā 'come', jānā 'go', and lenā 'take':

6.1 rāj ghar se bāhar nikal āyā
Raj house from out emerge came
Raj came out of the house.

6.2 rājesh ghar vāpas calā āyā
Rajesh house return moved came
Rajesh came back home.

Both 6.1 and 6.2 express motion toward the speaker, who is the focal point. The speaker is taken for granted as the focal point unless an explicit focus is provided for by the linguistic context in which the sentence occurs.

Contrast the above with the sentences in 7:

7.1 sudhīr mere kamre se nikal gayā
Sudhir my room from emerge went
Sudhir went out of my room.

7.2 vah sārā dūdh pī gayā
he all milk drink went
He drank up all the milk.

7.3 mujhko kamre kī cābhī mil gayī
I to room of key accrue went
I found the key to the room.

In 7.1, the explicator jānā 'go' expresses motion away from the speaker. In 7.2, it occurs with a transitive ingestive verb and expresses the meaning of hurried, impulsive action; in 7.3, it occurs with a dative subject verb and expresses the definitive meaning.

Finally, let us consider the following sentences with lenā 'take':

8.1 sīmā ne khānā khā liyā
Sima ag. meal eat went
Sima ate a meal.

8.2 rītā ne kapṛe dho liye
Rita ag. clothes wash took
Rita washed the clothes (for herself).

8.3 shīla angrezī bol letī hai
Sheela English speaks takes
Sheela can speak some English.

8.4 vah (man hī man) hās liyā
he (in his mind) laugh took
He laughed to himself.

In 8.1, the explicator verb lenā 'take' occurs with an ingestive verb khānā 'eat' and has a definitive meaning. In 8.2, it expresses a self-benefactive meaning. In 8.3 and 8.4, it expresses meanings that are not listed under 6 above.

3.1 I would like to claim that the use of the serial verb (instead of the simple verb) signals a definitive meaning. In addition, individual explicators signal specific meanings. For instance, the basic meaning of ānā is 'movement toward a focal point', that of jānā is 'movement away from a focal point, and that of lenā is 'action directed toward self'. The other meanings that are attributed to these explicators are a consequence of pragmatic factors. Consider the following:

9.1 uskī ãkhõ mẽ jigyāsā chalak āyī
his eyes in question spill came
There came a questioning look in his eyes.

9.2 ...vah āvāz de kar ro uṭhī aur merī god mẽ gir āyī
...she noise giving cry rose and my lap in fall came
She began crying (loudly) and fell into my lap. (JK 1968, 77)

The sentences in 9.1 and 9.2 do not strike a speaker of Hindi as unusual, although 9.1 does not satisfy the requirement of a motion verb. Verbs of communication, such as hāsnā 'laugh', muskarānā 'smile' likhnā 'write', etc., are not motion verbs; nevertheless, they are directed toward a focal point, the addressee in a communicative act. As such, it is not surprising that they occur with the explicator ānā 'come. One more example will make this clear:

9.3 mānya mitra bole, 'anāsakti!' aur muskarā āye
distinguished friend said detachment and smile came
My distinguished friend said, "detachment!" and smiled. (JK 1968,116)

The meaning I suggest for ānā 'come' as an explicator will account for all the cases in 9.1-3. The only adjustment required is in the types of main verbs specified as selecting ānā in 6. We will have to include an additional class of transitive/intransitive verbs of communication as selecting this explicator.

This, however, is not a complete account of the total meaning of the sentences in 9. Note that 9.1-3 also indicate sympathetic attitude of the speaker/narrator toward the subjects of these sentences. This becomes clear if we substitute ānā with other explicators such as paṛnā 'fall'. The effect is neutral; paṛnā indicates only a sudden change of state. It is, however, wrong to assume that this attitudinal meaning is a part of the meaning of ānā 'come'. Any main verb + ānā serial verb may yield this attitudinal meaning in an appropriate context. The meanings 'movement or orientation toward a focal point' and 'such movement plus sympathetic attitude of the observer' depend upon the participants undergoing the change of state. Obviously, it is less likely that an inanimate object moving toward oneself would invoke the attitude mentioned. In case of animate, especially human participants, the attitudinal meaning invoked can be made explicit by the addition of 'self-explaingin' elements to 9.3, as in 9.4:

9.4 mānya mitra bole, 'anāsakti!' aur (baṛe karuṇājanak ḍhang se)
(very pathetic manner with)
muskarā āye.

Note also that 9.5 and 6 yield no such attitudinal meaning:

9.5 andherā hote hī sīmā ghar calī āyī
dark happen Sima home moved came
Sima came home as soon as it became dark.

9.6 maĩ phir hās āyī, khūb hāsī
I again laugh came much laughed
I laughed much again. (Jk 1968,81)

9.5 has a straightforward interpretation. 9.6 implies no attitudinal meaning, as the action is not oriented toward the speaker/

narrator; it is oriented toward a focal point with which it is not necessary that the speaker/narrator have any empathy.

Now consider the following sentences with the explicator verb ānā 'go':

10.1 maĩ ne jitne bhī phal lā rakhe the (kambaxt) bandar
I ag. whatever fruit bring kept had (darned) monkeys

sab khā gaye
all eat went
The darned monkeys ate up all the fruits I had brought.

10.2 nāk dabā kar jaldī se davā pī jāo, mahak nahĩ lagegī
nose press having quickly medicine drink go smell no affect will
Hold your nose and drink up the medicine quickly, you will not smell it.

10.3 rākesh bahut sārī bātẽ kah gayā
Rakesh many all things say went
Rakesh blurted out many things.

Notice jānā 'go' does not merely indicate 'movement away from a focal point', but also a disapproving attitude toward the action expressed by the main verb. This can be made explicit by inserting a 'self-explaining' item in the sentence, for example kambaxt 'darned' in 10.1. An absence of such 'self-explaining' items does not necessarily exclude the attitudinal meaning. The meaning of 'hurried action disapproved by the observer' in addition to the basic meaning 'movement away from a focal point' depends upon the extra-linguistic context. For example, the sentence in 10.4 may simply mean 'drink up the medicine, make it disappear', or 'drink the darned thing up':

10.4 jaldī se davā pī jāo
quickly medicine drink go
Drink up the medicine quickly.

On the other hand, the sentential relative in 10.5 makes the attitudinal meaning explicit, but it is not absolutely necessary to have such linguistic clues to the meaning:

10.5 rākesh bahut sārī bātẽ kah gayā jo use kahnī nahĩ
Rakesh many all things say went which he say not

cāhiye thī
ought had
Rakesh blurted out many things which he should not have.

Given simply 10.3, the interlocutor has to attempt to interpret the intentions of the speaker based on his knowledge of the relationship between the speaker and Rakesh, facial expressions, if any, and so on. That the explicator 'go' implies such a meaning is not surprising. Note the opposition between ānā 'come' and jānā 'go'. As ānā implies sympathetic attitude based upon the meaning 'movement toward', it is perfectly natural that jānā 'go' indicates 'distaste or disapproval'

based upon the meaning 'movement away from'.[4]

Finally let us consider the sentences with the explicator lenā 'take':

11.1 vah roz āṭh nau ghaṇṭe so letā hai
he everyday 8-9 hours sleep takes
He (manages to) sleep eight to nine hours every day.

11.2 *vah āṭh nau ghaṇṭe so liyā hai
he 8-9 hours sleep taken has
He has slept for eight to nine hours.

11.3 ḍevid hindī bol letā hai
David Hindi speak takes
David can speak some Hindi.

11.4 RS: ... gāne ko pūrā karo, umā!
song DO complete do Uma
Uma! Please complete the song.

GP: nahī nahī sāhab, kāfī hai. laṛkī āpkī acchā gātī hai
no no sir enough is daughter your well sings
That's allright, sir. Your daughter sings well.

11.5 maī ne khānā khā liyā hai
I ag. meal eat taken have
I have (already) eaten.

11.6 maī āpke bhāī sāhab ko wāshingṭan dikhā lūngā
I your brother hon. DO Washington show take will
I will take your brother round Washington.

Notice that the meaning 'self-benefactive' would predict that the sentence in 11.6 is ungrammatical, as the action of the main verb dikhānā 'show' is 'other'-directed, i.e., directed toward a beneficiary, here expressed by the phrase āpke bhāī sāhab 'your brother'. Also, the meaning 'capability' would predict that the last sentence in the exchange in 11.4 could as well have been the sentence in 11.7:

11.7 ... laṛkī āpkī acchā gā letī hai
daughter your well sing takes
Your daughter can sing well.

That is, gā letī hai could be as appropriate as gātī hai. These predictions, however, do not turn out to be correct. The sentence in 11.4 with the explicator lenā would lead to disastrous social consequences, as it would indicate to the girl and her father that their guests do not think much of her singing. The implication of saying 11.7 is the same as that of saying 11.3, i.e., 'she can sing a little'. The question arises, is this meaning inherent in the explicator lenā. I would like to claim that the only meaning inherent in the explicator lenā is the meaning 'self-directed action'. The meanings of 'modest capability or modest achievement' are pragmatically determined. The arguments in favor of this claim are as follows. First, if the meaning

of lenā 'take' were 'capability acquired as a result of following some prolonged regimen', as claimed by Shapiro 1974, there is no reason why the serial verbs composed of verbs indicating skills and explicator lenā 'take' will be incompatible with either the completive aspect or negation. Notice that the modal expressing capability is not incompatible with either negation or with the perfective aspect, as in 12.

12. rāj mūvī (nahĩ) dekh sakta hai / sakā
Raj movie not see can could
Raj can (not) / could (not) see the movie.

The explicator lenā, however, is, as in (12a-13):

12a. *ḍeviḍ hindī nahĩ bol letā hai
David Hindi not speak takes
David can not speak (a little) Hindi

13. *ḍeviḍ hindī bol liyā
David Hindi speak took
David could speak (a little) Hindi.

This particular restriction on lenā 'take' in Hindi makes sense if we accept that lenā 'take' indicates modest capability or achievement. That is, one can assert modest capability or achievement; it is odd to negate such capability or achievement. That is why, whereas 14 is normal, 14a is odd (note that the same applies to the English equivalents, too):

14. vah thoṛī-bahut hindī bol letā hai
he a little Hindi speak takes
He can speak a little Hindi.

14a. *vah thoṛī-bahut hindī nahĩ bol letā hai
he a little Hindi not speak takes
?He can not speak a little Hindi.

This can be further exemplified with 15-15a, 16, and 17:

15. vah thoṛī hī hindī boltā / bol saktā hai / ??bol letā hai
he a little only Hindi speaks/speaks can / speak take

15a. vah thoṛī bhī hindī nahĩ boltā / bol saktā / *bol letā
he a little even Hindi not speaks/speak can /* speak takes

In 15, the use of the emphatic particle hī 'only' (or 'just') makes it redundant to use the explicator lenā to make the statement more definitive, in 15a, negation makes the use of the explicator even less acceptable. Sentences 16 and 17 confirm the meaning suggested above:

16. ??ravishankar sitār bajā lete haĩ
Ravishankar sitar play takes
Ravishankar can play the sitar (a little).

17. maĩ sitār bajā letā hū̃
I sitar play take
I can play the sitar (a little)

It is polite of the famous Ravishankar to utter 17, it is insulting of anyone else to say 16 of Ravishankar.

The non-occurrence of lenā 'take' in the perfective is natural, too. The perfective in Hindi indicates completed action or event. The explicator lenā 'take' with verbs denoting skill indicates incomplete achievement.

The question may arise as to how the meaning 'modest capability or achievement' is related to the meaning 'self-directed action'. The link is not too far-fetched. Typically, one acquires a skill to serve one's purposes. The other meanings, such as modesty or humility on the part of the speaker when he uses lenā 'take' for himself, and judgement of incomplete mastery when one uses it for others, depends upon pragmatic factors (cf. 16 and 17 above). These attitudinal meanings are not a property of the sentences with the serial verbs involving lenā 'take'. Note that given 18 and 19, it is not necessary that they be interpreted as expressing an attitudinal meaning:

18. rītā aur sīmā mūvī calī gayī̃ aur rānī ne akele sārā
Rita and Sima movie moved went and Rani ag. alone whole

makān sāf kar liyā
house clean do took
Rita and Sima went to the movies and Rani cleaned the house by herself.

19. rāj cārõ axbār paṛh letā hai
Raj all four newspapers read takes
Raj reads all the four newspapers (to benefit himself, or, reads well enough to read all the four).

They may simply mean that the agent of the transitive verb carried out the action for his/her own benefit. Depending upon other contextual factors, they may, however, have an attitudinal meaning, too. For instance, 18 may mean Rani cleaned up the house to indicate her solidarity with her housemates, and 19 may mean Raj can read well enough to read all four newspapers. Similarly, 11.6 means I consider myself such a close friend of yours, that if I take your brother round Washington, it would be as if I were doing it for myself. To summarize what I have said so far, lenā 'take' as an explicator has the basic meaning 'self-directed action'. The other meanings are as follows. With verbs denoting skills, it may indicate modest achievement. As such, with first person subjects, it indicates modesty, with other subjects, it expresses a speaker judgement. With verbs that take overt benefactives (benefactives other than the agents), the use of lenā 'take' indicates intimacy. All these meanings are pragmatically determined.

4.0 Further evidence could be presented to show that certain meanings attributed to other explicators are similarly determined by pragmatic factors. But, this will not add to this discussion signi-

ficantly. I would like to add here that I have evidence to suggest that the use of verb serialization to signal speaker intentions, attitudes and judgements is not peculiar to Hindi-Urdu; most South Asian languages exploit this construction for this purpose (See Cardona 1965 and Schiffman 1969, for example).[5] Unfortunately, I have found no evidence to suggest that other languages, such as West African languages that have serial verbal construction, use these constructions in similar fashion. The reason for this may be that in West African languages, serial verbal constructions are grammaticized to a greater extent to express aspectual, causative and case-meanings (such as instrumental, benefactive, etc.).

I have shown above that the total meaning of the serial verbal construction is not derivable from either the lexical meanings of the verbs involved or the meaning of the sentence in which the serial verb occurs. In getting the 'message' of sentences with serial verbs, the hearer or reader has to attempt to determine the stance of the speaker/author and deduce the meaning from other factors such as participants involved in the speech event, and their relationship to each other, as well as the purpose of the speaker/author in using the construction. This leads to the conclusion that an account of verb serialization, at least in Hindi-Urdu and other South Asian languages, needs a pragmatic in addition to a syntactic-semantic treatment.

NOTES

[1]The research reported herein was carried out under a research grant from the Research Board, University of Illinois at Urbana-Champaign. An earlier version of this paper was presented under the title "Speaker Intentions and Attitudes and Verb Serialization" at the Conference on "The signifying animal: the grammar of man's language and of his experience", June 28-30, 1978, University of Illinois, Urbana.

[2]These are discussed in Hook 1974. Examples of intensive and extent-clauses in Hindi are given in (i) and (ii) respectively:

(i) havā se peṛ jhuke par rahe the
wind by trees bend intens. fall-ing were
The trees were bending low due to the wind.

(ii) usne mujhe bahut tang kiyā, yahā̃ tak ki merā ek
he ag. me much torment did here till that my one

jūtā chipā diyā
shoe hide gave
He/she tormented me much, he/she went so far as to hide my one shoe.

[3]These are constructions such as the ones in (iii):

(iii) rediyo itnā tez baj rahā hai, kahĩ bacce jag na
radio so loud play ing is children wake not

jāẽ [kahĩ ... na = lest]
go
The radio is so loud, I am afraid it may wake up the children.

For a review of Gaeffke 1967, see Kachru 1970.

[4]Sinha 1972 discusses the deictic use of ānā 'come' and jānā 'go'. His discussion, however, is limited to the occurrence of these explicators with motion verbs such as calnā 'move', caṛhnā 'rise', utarnā 'come down', and nikalnā 'emerge'. Nevertheless, his observations about the 'expectation' deixis, namely, "if something turns out good, it goes with 'come'; if it turns out bad, it goes with 'go'" (p. 354) is consistent with what I am saying in this study.

[5]A good example of the use of explicator verbs in Dravidian languages to indicate speaker attitudes and judgements is the following (Schiffman 1969, pp. 52-53):

(i) ate ūti tolecci cāpiṭṭ-iṭṭu pōngaḷ-ēn
Why (don't you) pour it (out), eat it up, and get going, for the love-of-mike?

The explicator tole 'to lose, get lost' is 'extremely expressive and often has more to do with the feelings and opinions the speaker has about the personality and status of his interlocutor.' In the sentence above, tole 'lose' is said to indicate the speaker's disgust or impatience with the addressee.

APPENDIX

denā 'give'	occurs with (a) transitive verbs other than the ingestive and indicates the action is directed toward a beneficiary other than the subject, and (b) certain intransitive verbs (meaning not specified).
uṭhnā 'rise'	occurs with intransitive verbs of momentary action and indicates suddenness and absence of any conscious causal motivation.
baiṭhnā 'sit'	occurs with certain transitive verbs and indicates suddenness but also conscious mental planning and awareness of the main verbal action. (Shapiro 1974)
parnā 'fall'	occurs with intransitive change of state verbs and verbs such as hās 'laugh', ro 'cry', and bol 'speak', etc., and indicates suddenness.

dālnā 'pour' occurs with transitive verbs that express violent actions and verbs such as kar 'do', paṛh 'read', likh 'write', etc., and indicates vilence.

These are exemplified in 1-5 below:

1.1 rāj ne kamrā sāf kar diyā
Raj ag. room clean do gave
Raj cleaned the room.

1.2 sīmā ne seb kāt diye
Sima ag. apple cut gave
Sima sliced the apple.

2. vah caũk uṭha
he startle rose
He was startled.

3. anītā sīmā ko mār baiṭhī
Anita Sima DO hit sat
Anit hit Sima (in a rage).

4.1 sumit gir paṛā
Sumit fall fell
Sumit fell down.

4.2 sab log hās paṛe
all people laugh fell
Everyone burst out laughing.

5.1 rām ne mohan ko mār ḍālā
Ram ag. Mohan DO hit poured
Ram killed Mohan.

5.2 usne patra likh ḍālā
he ag. letter write poured
He wrote the letter (to get it over with).

REFERENCES

BAHL, Kali C. 1967. A reference grammar of Hindi. University of Chicago. Mimeographed.
BURTON-PAGE, J. 1957. Compound and conjunct verbs in Hindi. Bulletin of the School of Oriental and African Studies 19.469-78.
CARDONA, George. 1965. A Gujarati reference grammar. Philadelphia: University of Pennsylvania Press.
CORUM, Claudia. 1975. A pragmatic analysis of parenthetic adjuncts. Chicago Linguistics Society 11.133-41.
FELDMAN, Carol F. 1974. Pragmatic features of natural language. Chicago Linguistics Society 10.151-61.
FREEMAN, Cecilia. 1976. A pragmatic analysis of tenseless why-questions. Chicago Linguistics Society 12.208-19.
GAEFFKE, Peter. 1967. Untersuchungen zur Syntax des Hindi. The Hague: Mouton.

GURU, Damta P. 1922. Hindi Vyakaran. Kashi Nagari Pracharini Sabha. Seventh printing 1962.
HACKER, P. 1958. Zur Funktion einiger Hilfsverben im modernen Hindi. Mainz: Akademie der Wissenschaften und der Literatur.
_____. 1961. On the problem of a method for treating the compound and conjunct verbs in Hindi. Bulletin of the School of Oriental and African Studies 24.484-516.
HOOK, Peter E. 1974. The compound verb in Hindi. The Michigan Series in South and Southeast Asian Languages and Linguistics. The University of Michigan: Center for South and Southeast Asian Studies.
KACHRU, Yamuna. 1965. A transformational treatment of Hindi verbal syntax. University of London Ph.D. thesis. Unpublished.
_____. 1966. An introduction to Hindi syntax. University of Illinois, Department of Linguistics. Mimeographed.
_____. 1970. Review of Gaeffke 1967. Language 46.968-75.
_____. 1976. Complex verbal items in West African and South Asian languages. Paper presented at the MLA meeting at New York.
_____. 1977. Compound verbs in South Asian languages. Paper presented at the meeting of the American Oriental Society at Cornell University, Ithaca.
_____. 1978. The serial verbal construction in South Asian and West African languages. Unpublished.
KELLOGG, Samuel H. 1875. A grammar of the Hindi language. Oriental reprint. New Delhi: Oriental Books Reprint Corporation.
KUMAR, J. 1968. Anantar. Delhi: Purvodaya Prakashan.
MCGREGOR, S. 1972. Outline of Hindi grammar. Oxford: Clarendon Press. Second edition 1977.
MORGAN, Jerry L. 1975. Some interactions of syntax and pragmatics. In P. Cole and J.L. Morgan, eds.: Syntax and Semantics 3: Speech Acts. New York: Academic Press.
_____. 1978. Two types of conventions in indirect speech acts. In P. Cole, ed.: Syntax and Semantics 9: Pragmatics. New York: Academic Press.
PORIZKA, Vincenc. 1967-69. On the perfective verbal aspect in Hindi. Archiv Orientalni 35-37. 64-88, 208-31, 233-51, 19-47, and 345-64.
SCHIFFMAN, Harold. 1969. A transformational grammar of the Tamil aspectual system. University of Chicago dissertation. University Microfilms.
SHAPIRO, Michael C. 1974. Aspects of Hindi abstract verbal syntax. University of Chicago dissertation. University Microfilms.
SINHA, Anjani K. 1972. On the deictic use of 'coming' and 'going' in Hindi. CLS 8.351-58.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

POSTPOSITIONS IN PASSIVE SENTENCES IN HINDI

Rajeshwari Pandharipande

In Passive sentences in Hindi the ex-subject takes one of two postpositions, i.e., se 'by' and (ke) dwārā 'by'. The goal of this paper is to define the conditions which determine the choice of one as opposed to the other postposition. In this context, the data is examined and it is argued with illustrations that the conditions which determine the distribution of the above postpositions is not definable purely in terms of the syntax or the semantics of the language. It is pointed out that pragmatic information is essential to correctly predict the distribution of these postpositions. Also, it is shown that the above hypothesis is independently motivated and needed in the language to explain a number of facts about the syntactic constructions, such as causative, etc., which also contain the above postpositions.

0.0 Introduction

A number of recent studies in linguistics (Davison 1975, Green 1975, Morgan 1978) have proved beyond doubt that pragmatics plays an important role in accounting for linguistic facts. The purpose of this paper is to point out the role of pragmatics in determining the choice of postpositions in Passive sentences in Hindi.

In earlier studies (Guru 1952, Kachru 1966) it is claimed that the ex-subject in Passive sentences in Hindi takes one of two postpositions, namely se 'by' and (ke) dwārā 'by'. These studies do not explicitly mention (a) whether or not the above postpositions are mutually interchangeable in all contexts nor (b) whether or not there are linguistically definable conditions to determine the choice of one as opposed to the other. The major points of focus in this paper are the following: (a) the postpositions se 'by' and (ke) dwarā 'by' are not always mutually interchangeable and therefore, they can not be listed as alternative postpositions marking the agent in Passive sentences in Hindi, (b) the conditions which determine the choice of one postposition as opposed to the other are not definable purely in terms of syntax and/or semantics of the language; pragmatic information is essential to correctly predict the distribution of these postpositions, and (c) syntactic constructions other than Passive which contain se 'by' and (ke) dwārā 'by' provide independently motivated evidence to support the above hypothesis.

1.0 Evidence to Support Hypothesis

A close examination of the data shows that se 'by' and (ke) dwārā 'by' are not always mutually interchangeable. Consider the following examples:

(1) { mujh se / *mere dwārā } itnī ṭhaṇḍ mẽ bāhar khaṛā nahĩ
me by so much cold in outside stood not

rahā gayā
remained went
I could not stand outside in so much cold.

(2) yah patrikā viśwanāth { ke dwārā / *se } dillī pres mẽ mudrit
this magazine viśwanath by Delhi press in printed

kĩ gaī
did went
This magazine was printed by Viśwanath in Delhi press.

(3) mantriyõ { se / ke dwārā } yah sūcnā dī gaī ki haṛtāl
ministers by this information gave went that strike

mẽ bhāg lenewālõ par yogya kār wāī kĩ jāegī
in participants on necessary action did will go
The information was given by the ministers that the necessary action will be taken against the participants in the strike.

Notice that se 'by' and (ke) dwārā 'by' are used interchangeably in (3). However, (ke) dwārā 'by' is blocked in (1) and se 'by' is blocked in (2).

There are three possible hypotheses to predict the distribution of these postpositions: (a) the distribution is totally random, (b) there are purely syntactic/semantic constraints which determine the choice of these postpositions, and (c) pragmatics plays an important role in determining the choice of these postpositions. Hypothesis (a) is to be discarded since it does not provide any systematic explanation for the phenomenon exemplified in (1)-(3). In what follows, it will be pointed out that the choice of the postpositions is not definable in terms of the syntax of the postpositions. A close examination of the data shows that se 'by' and (ke) dwārā 'by' are syntactically similar to each other in that they both mark a syntactically downgraded NP. In other words, both se 'by' and (ke) dwārā 'by' mark NPs which lack a number of syntactic properties of the basic subject in Hindi.

In the following discussion, it will be pointed out that the processes of conjunctive participialization and identical subject-deletion are blocked for Passive sentences with se 'by' as well as for Passive sentences with (ke) dwārā 'by'. The process of conjunctive participialization can be briefly described as follows: (a) two sentences are conjoined, (b) usually, there is a temporal sequence of actions expressed in the sentences, and (c) the subjects of the sentences are identical. When this process applies the following changes

occur: (a) the verb expressing the first action in the sequence is participialized by adding kar to its stem and (b) the subject in the first clause is delet under identity with the subject in the second clause. Consider the following examples:

(4) laṛke ne khānā khāyā ɔr laṛkā skūl gayā
boy Ag.M. meal ate and boy school went
After eating the meal the boy went to school.

Notice that (4) is two sentences conjoined with ɔr 'and' and the action of eating expressed in the first sentence precedes the action of going to school expressed in the second sentence. Also, notice that the subject laṛkā 'boy' is identical in both sentences. Conjunctive participialization and thereby identical subject-deletion apply, yielding the following sentence:

(5) ∅ khānā khākar laṛkā skūl gayā
meal after eating boy school went
The boy went to school after eating the meal.

Now consider the following Passive sentences (6) and (7) with se 'by' and (ke) dwārā 'by'. Note that when the process of conjunctive participialization applies to (6) and (7), the resultant (6a) and (7a) are ungrammatical.

(6) laṛke se kitāb paṛhī nahĩ gaī ɔr laṛkā uṭh gayā
boy by book read not went and boy got up
Being unable to read the book the boy got up.

(6a) *∅ kitāb paṛhī na jākar laṛkā uṭh gayā
book read neg. going boy got up
Being unable to read the book, the boy got up.

(7) mantriyõ (ke) dwārā ghoṣṇā kī gaī ɔr mantrī ghar gae
ministers by announcement did went and ministers home went
The announcement was made by the ministers and the ministers went home.

(7a) *∅ ghoṣṇā kī jākar mantrī ghar gae
announcement did going ministers home went
After making the announcement the ministers went home.

1.1 More Evidence

More independently motivated evidence to support our hypothesis comes from sentences where se 'by' and (ke) dwārā 'by' are used independently of Passive. Consider examples (8) and (9) which are not Passive sentences. Se 'by' is used in (8) while (ke) dwārā 'by' is used in (9). When the processes of conjunctive participialization and identical subject-deletion apply, the resultant sentences, (8a) and (9a), are ungrammatical.

(8) mujh se šīšā ṭūṭā ɔr mɛ̃ ro paṛā
me by mirror broke and I cry burst out
I broke the mirror (unintentionally) and I burst out crying.

(8a) *ø šīšā ṭūṭkar mɛ̃ ro paṛā
mirror after breaking I cry burst out
After breaking the mirror I burst out crying.

(9) prāntīy bhāṣāõ (ke) dwārā sarkār ke matõ
provincial languages by government of opinions

kā pracār huā ɔr prāntīy bhāṣāẽ viksit huĩ
of propaganda happened and provincial languages progressed
The opinions of the government were propagated by the provincial languages and (thereby) the provincial languages progressed.

(9a) *ø sarkār ke matõ kā pracār hokar prāntīy
government of opinions of propaganda happening provincial

bhāṣāẽ viksit huĩ
languages progressed
After propagating the opinions of the government, the provincial languages progressed.

Notice that in (9) the postpositional phrase prāntīy bhāṣāõ (ke) dwārā 'by the provincial languages', is not a subject NP, as is evident from (9a) where it is deleted under identity with prāntīy bhāṣāẽ 'provincial languages' in the second clause. Notice that (9a) is ungrammatical. (8) and (9) point out that when used independently of Passive both se 'by' and (ke) dwārā 'by' mark a syntactically downgraded NP.

1.2 Causative Sentences

Causative sentences in Hindi provide more evidence for the hypothesis that se 'by' and (ke) dwārā 'by' mark a syntactically downgraded NP. Consider examples (10)-(13).

(10) mɛ̃ ne jān se mohan ke dwārā kām karwāyā
I Ag.M. John by Mohan by work do+caus+past
I made Mohan get the work done by John.

(11) ø jān se mohan (ke) dwārā kām karwākar mɛ̃ ghar gayā
John by Mohan by work having made to do I home went
I went home after making Mohan get the work done by John.

(12) *mɛ̃ ne ø mohan (ke) dwārā kām karwākar jān ghar gayā
I Ag.M. Mohan by work having made to do John home went.
After I made Mohan get the work done (by John), John went home.

(13) *mɛ̃ ne jān se ∅ kām karwākar mohan ghar gayā
I Ag.M. John by work having made to do Mohan home went
After I made Mohan get the work done by John, Mohan went home.

Notice that when the causer mɛ̃ 'I' in (10) is deleted the process of conjunctive participialization applies and the resulting sentence (11) is grammatical. In contrast to this, when the causee with se 'by', i.e., jān se 'by John', is deleted by the process of participialization, the resulting sentence (12) is ungrammatical. Similarly, when participialization applies, deleting the causee with (ke) dwārā 'by', i.e., Mohan (ke) dwārā 'byMohan', the resulting sentence (13) is ungrammatical. Examples (10)-(13) point out that se 'by' as well as (ke)dwārā 'by' mark syntactically downgraded NPs.

2.0 Semantics

The following discussion focuses on the following points: (a) se 'by' and (ke) dwārā 'by' differ from each other on two semantically definable grounds and (b) the semantic differences between the two postpositions can not be taken to be the criterion for the distribution of the postpositions in Hindi.

The first property which is not commonly shared by the postpositions under discussion is that of expressing capabilitative meaning. In Passive sentences the ex-subject with se 'by' generally expresses capability of the ex-subject to carry out the act expressed by the verb. In contrast to this, Passive sentences with (ke) dwārā 'by' do not express the capability of the ex-subject. Consider examples (14) and (15). Notice that the ex-subject mɛ̃ 'I' in (14) is followed by se 'by' and the sentence expresses the capabilitative meaning, while in (15) the ex-subject kamiṭī 'committee' is followed by (ke) dwārā 'by' and does not express capabilitative meaning.

(14) mujh se apnī mā ko us hālat mẽ dekhā nahī̃ gayā
me by self's mother obj. that condition in saw not went
I could not bear to see my mother in that condition.

(15) kamiṭī (ke) dwārā prastāv manzūr nahī̃ kiyā gayā
committee by proposal approve not did went
(a) The proposal was not approved by the committee.
(b) *The committee could not approve the proposal.

On the basis of the above difference between se 'by' and (ke) dwārā 'by', the condition on the distribution of the postpositions may be defined as follows: In Passive sentences se 'by' is used to convey the capabilitative meaning while (ke) dwārā 'by' can not be used to convey the capabilitative meaning. However, this hypothesis is not plausible since it faces the following problems. The first problem is that Passive sentences with se 'by' do not always express capabilitative meaning. In Pandharipande (1978) it is pointed out that if the

pragmatic conditions are not suitable, a sentence such as (16) fails to convey a capabilitative meaning although it is a Passive sentence with the postposition se 'by'.

(16) kamiṭī se is prastāv par koī nirṇay nahĩ liyā gayā
committee by this proposal on any decision not took went
(a) No decision was taken by the committee on this proposal.
(b) *The committee could not take any decision on the proposal.

Furthermore, in Pandharipande (1979) it is pointed out that the capability of the ex-subject in a Passive sentence is determined by subject-internal conditions such as a headache, pain, psychological state of mind, etc.[1] If the speaker of (16) is a newspaper reporter and is not aware of the conditions (internal vs. external) which determine the capability of the ex-subject, then (16) does not express the capabilitative meaning. Since not all Passives with se 'by' express the capabilitative meaning, it can not be held to be the criterion for choosing the postposition se 'by' as opposed to (ke) dwārā 'by'.

Another problem with this hypothesis is that it predicts a complementary distribution of se 'by' and (ke) dwārā 'by' and thereby fails to predict the interchangeability of the postpositions in sentences such as (3). We may assume that se 'by' is used to express both a capabilitative meaning as in (1) and a non-capabilitative meaning as in (3). In contrast to this, the use of (ke) dwārā 'by' is restricted only to expressing the non-capabilitative meaning. However, the following examples contradict this assumption.

(17) yah patrikā dillī samācār patr ke liye viśwanāth
this magazine Delhi samacar patr for viśwanath

{ke dwārā / *se / by} dillī pres naī dillī mẽ mudrit kī gaī
Delhi press New Delhi in printed did went
This magazine was printed by Viśwanath at Delhi press, New Delhi for Delhi Samacar patr.

Notice that (17) does not express a capabilitative meaning and should allow the occurrence of se 'by', yet se 'by' is blocked. Now consider example (18) which does not express a capabilitative meaning, and yet (ke) dwārā 'by' is blocked. According to the above hypothesis, (ke) dwārā 'by' should be allowed in (18).

(18) mā {se / *ke dwārā / by} usko sab kuch diyā gayā thā - pɛsā
mother her everything gave went was - money

pyār izzat
love honor
(a) Everything was given to her by her mother - money, love, honor.
(b) *Mother could give her everything - money, love, honor.

2.1 Direct vs. Indirect Involvement of the Agent.

Se 'by' and (ke) dwārā 'by' differ from each other on another semantically definable basis. Both se 'by' and (ke) dwārā 'by' mark a syntactically downgraded NP and therefore, following Keenan's (1974) definition of agent, both postpositions mark NPs which are moved away from agency. According to Keenan (1974), more often than not an agent is also the subject of a sentence. However, an NP + se and an NP + ke dwārā are not the same distance from agency. A Passive sentence with an NP + se expresses direct involvement of the ex-subject in carrying out the act expressed by the verb. In contrast to this, a Passive sentence with an NP + ke dwārā does not express direct involvement of the ex-subject in carrying out the act expressed by the verb, but rather, expresses only an indirect instrumentality of the NP toward carrying out the act expressed by the verb. Examples (19) and (20) illustrate this difference between the NP with se 'by' (19) and the NP with ke dwārā 'by'. (19) and (20) are the counterparts of (18) and (17), respectively. Notice that when the ex-subject's direct involvement in (18) is explicitly negated, (19) presents a contradiction, while no such contradiction results in the case of negating the direct involvement of the ex-subject with ke dwārā 'by' ((17), (20)).

(19) ???mā̃ se usko sab kuch diyā gayā thā pɛsā pyār
mother by her to everything gave went was - money love

izzat - par mā̃ ne khud usko nahĩ diyā thā
honor - but mother Ag.M. self her to not gave was
Everything was given to her by her mother - money, love, honor, but mother herself did not give her (money, love, honor).

(20) yah patrikā dillī samācār patr ke liye viśwanāth ke dwārā
this magazine Delhi samacar patr for viśwanath by

dillī pres naī dillī mẽ mudrit kī gaī lekin viśwanāth
Delhi press New Delhi in printed did went but viśwanath

ne khud mudrit nahĩ kī
Ag. self printed not did
This magazine was printed by Viśwanath at Delhi press, New Delhi for Delhi Samacar patr. However, the job of printing was not done by Viśwanath himself.

(19) and (20) point out that the direct involvement of the ex-subject mā̃ 'mother' is implied in (18) while direct involvement of the ex-subject Viśwanāth is not implied in (17). The hypothesis presented in this section explains why se 'by' and (ke) dwārā 'by' are not mutually interchangeable in (17) and (18).

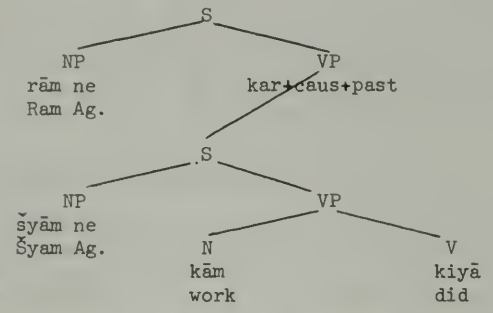
2.2 Causative Sentences

More evidence for the hypothesis under discussion comes from causative sentences in Hindi where se 'by' and (ke) dwārā 'by' express

direct and indirect involvement of the causees. For the purpose of this discussion I shall mention some relevant facts and assumptions about causative sentences in Hindi. These facts are already discussed in Kachru (1975). (i) A causative sentence in Hindi expresses one or two levels of causation. Thus, a causative sentence can have a structure such as in (21), i.e., A causes B to perform the act; or it can have a structure such as in (22), i.e., A causes B and B causes C to perform the act expressed by the verb. (ii) A causative sentence in Hindi has a complex underlying structure (refer to 21a).

(21) rām ne šyām se kām karwāyā
Ram Ag. Šyam by work do-caus-past
Ram made Šyam do the work.

(21a) Underlying structure of (21) (Kachru 1975).



(22) rām ne šyām se mohan ke dwārā kām karwāyā
Ram Ag. Šyam by Mohan by work do+caus+past
Ram made Mohan get the work done by Šyam.

It is implied in Hindi causative sentences that the causee himself/herself directly performs the act expressed by the verb. Thus, in (21) it is implied that the causee Šyam himself did the work. If the direct agency of Šyam in (21) is explicitly negated, then (23) presents a contradiction.

(23) ???rām ne šyām se kām karwāyā par šyām ne khud
Ram Ag. Šyam by work do+caus+past but Šyam Ag. self

kām nahĩ kiyā
work not did
Ram made Šyam do the work but Šyam himself did not do it.

(iii) Causee$_1$ generally takes the postposition se 'by' or ko 'to' while causee$_2$ generally takes the postposition (ke) dwārā 'by' (22). In this paper I will not discuss causative sentences with the postposition ko 'to' since they are not relevant for our present purposes.

A close examination of the data shows that the causee with (ke) dwārā 'by' is not semantically similar to the causee with se 'by'. Direct agency of the causee se 'by' in carrying out the act expressed by the verb is assumed in a causative sentence. However, direct agency of the causee is not implied if the causee is followed by (ke) dwārā 'by'. Consider example (22) which expresses two levels of causation. (22a) shows that if direct agency of the causee se 'by' performing the act is negated the result is ungrammatical.

(22a) ???rām ne šyām se mohan ke dwārā kām karwāyā par
Ram Ag. Šyam by Mohan by work do+caus+past but

šyām ne khud kām nahĩ kiyā
Šyam Ag. self work not did
Ram made Mohan get the work done by Šyam but Šyam did not do it himself.

(22b) rām ne šyām se mohan ke dwārā kām karwāyā par mohan
Ram Ag. Šyam by Mohan by work do+caus+past but Mohan

ne khud kām nahĩ { kiyā / karwāyā }
Ag. self work not { did / do+caus+past }

Ram made Mohan get the work done by Šyam but Mohan did not { do it himself. / make Šyam do it }

In contrast to (22a), consider example (22b) which negates the direct agency of the causee + (ke) dwārā 'by', (i) in carrying out the act and (ii) in causing the causee Šyam to perform the act expressed by the verb karna 'to do'. Notice that (22b) does not present any contradiction. If direct agency of the causee + (ke) dwārā 'by' was implied in (22) then (22b) would be a contradiction.

2.3 More Evidence

More evidence for the hypothesis under discussion comes from causative sentences such as (23). Notice that the order of the causees in (22) is reversed. The causee with (ke) dwārā 'by' (i.e., Mohan (ke) dwārā 'by Mohan'), precedes the causee with se 'by' (i.e., šyām se 'by Šyam'), in (23). If the word order was relevant for the direct vs. indirect agency of the causees then we expect (23) to be different from (22). However, (23a) and (23b) show that this is not the case.

(23) rām ne mohan ke dwārā šyām se kām karwāyā
Ram Ag. Mohan by Šyam by work do+caus+past
Ram made Mohan get the work done by Šyam.

(23a) ???rām ne mohan ke dwārā šyām se kām karwāyā par
Ram Ag. Mohan by Šyam by work do+caus+past but

šyām ne khud kām nahĩ kiyā
Šyam Ag. self work not did
Ram made Mohan get the work done by Šyam but Šyam himself did not do it.

(23b) rām ne mohan ke dwārā šyām se kām karwāyā par
Ram Ag. Mohan by Šyam by work do+caus+past but

mohan ne khud {kām / ∅} nahĩ {kiyā / karwāyā / did / do+caus+past}
Mohan Ag. self work not

Ram made Mohan get the work done by Šyam but Mohan himself did not {do it. / make Šyam do the work.}

Examples (23a) and (23b) show that it is the causee with se 'by' (i.e., šyām se 'by Šyam') whose direct agency is implied in (23). Also, example (23b) indicates that the causee with ke dwārā 'by', (i.e., mohan ke dwārā 'by Mohan'), is not the direct agent in carrying out the act nor the direct agent of the action of making Šyam perform the act expressed by the verb.

In other words, it is the postposition and not the word order which indicates direct vs. indirect agency of the causee in a causative sentence in Hindi.

It is clear from the above discussion that not all causative sentences in Hindi necessarily imply that the causee himself performs the act expressed by the causative verb. However, all causative sentences in Hindi commonly share one property, i.e., they imply that the act expressed by the verb is accomplished. If it is explicitly mentioned that the act did not get done, then the causative sentence presents a contradiction as is evident from the following example.

(24) ???rām ne šyām {se / ke dwārā} mohan {ke dwārā / se} kām karwāyā
Ram Ag. Šyam by Mohan by work do+caus+past

par kām nahĩ hua
but work not happened
Ram made {Šyam / Mohan} get the work done by {Mohan / Šyam} but the work did not get done.

2.4 More Causative Sentences

Our hypothesis is further supported by two types of causative sentences: (a) A causative sentence in which direct agency of both causees is implied, i.e., where it is implied that causee A directly caused causee B to perform the act and B himself performed it. (b) A causative sentence where direct agency of neither of the causees is implied. In the first case where direct agency of both causees is implied, we expect ke dwārā 'by' to be blocked since according to our hypothesis ke dwārā 'by' does not express direct agency. Instead, we expect that both causees would take se 'by' since se 'by' marks direct agency of the causee. However, such repetition of the postpositions

is not permitted in causative sentences in Hindi. In such cases a native speaker of Hindi uses another postposition, ke hāthõ 'at the hands of'. Consider the following example.

(25) rām ne šyām se mohan { ke hāthõ / *ke dwārā / *se } kām karwāyā
Ram Ag. Šyam by Mohan by work do+caus+past
Ram made Šyam get the work done by Mohan.

Ke hāthõ ' at the hands of' indicates direct agency of the causee as is evident from the following sentences (26a) and (26b). In (26a) direct agency of Šyam in causing Mohan to do the work is explicitly negated. In (26b) direct agency of Mohan in performing the act is explicitly negated. Notice that both (26a) and (26b) present a contradiction.[2]

(26a) ???rām ne šyām se mohan ke hāthõ kām karwāyā
Ram Ag. Šyam by Mohan at the hands of work do+caus+past

par šyām ne khud nahĩ karwāyā
but Šyam Ag. self not do+caus+past
Ram made Šyam get the work done by Mohan but Šyam himself did not make Mohan do it.

(26b) ???rām ne šyām se Mohan ke hāthõ kām karwāyā
Ram Ag. Šyam by Mohan at the hands of work do+caus+past

par mohan ne khud kām nahĩ kiyā
but Mohan Ag. self work not did
Ram made Šyam get the work done by Mohan but Mohan himself did not do it.

If direct agency of neither causees is implied, then se 'by' is blocked since it expresses direct agency. Also, according to the general constraint mentioned above, repetition of ke dwārā 'by' is blocked. In this case, native speakers use a periphrastic device, se kahkar 'having said to'. Consider example (27).

(27) rām ne šyām se kahkar mohan ke dwārā kām karwāyā
Ram Ag. Šyam having said to Mohan by work do+caus+past
Ram made Šyam get the work done by Mohan.

(27a) and (27b) show that when direct agency of the causees is negated neither (27a) nor (27b) present a contradiction.

(27a) rām ne šyām se kahkar mohan ke dwārā kām karwāyā
Ram Ag. Šyam having said to Mohan by work do+caus+past

par šyām ne khud nahĩ karwāyā
but Šyam Ag. self not do-caus-past
Ram made Šyam get the work done by Mohan, but Šyam himself did not get it done by Mohan.

(27b) rām ne šyām se kahkar mohan ke dwārā kām karwāyā
Ram Ag. Šyam having said to Mohan by work do+caus+past

par mohan ne khud kām nahĩ kiyā
but Mohan Ag. self work not did
Ram made Šyam get the work done by Mohan but Mohan himself did not do it.

The following evidence further supports our hypothesis, namely that se 'by' expresses direct agency of the NP (marked with se 'by') in carrying out the act expressed by the verb. Ke hāthõ 'at the hands of' can be substituted for se 'by' in this case. Consider the following examples.

(28)[3] {mujh se / mere hāthõ} šīšā ṭūṭā
{by me / at my hands} mirror broke
The mirror got broken {by me. / at my hands.}

Furthermore, I would like to mention that ke hāthõ 'at the hands of' does not occur in Passive sentences as a substitute for se 'by' or (ke) dwārā 'by'. The reason for this is that Passive sentences in Hindi express an intentional or volitional act (Kachru 1972, Pandharipande 1978). Ke hāthõ 'at the hands of' on the other hand, occurs only in sentences expressing a non-volitional act. The se-construction in (28) expresses a non-volitional act, where it is implied that the subject mɛ̃ 'I' did not perform the act intentionally. When the intention of the agent mɛ̃ 'I' is explicitly negated, as in (28a), it does not present a contradiction.

(28a) mere na cāhne par bhī {mujh se / mere hāthõ} šīšī ṭūṭā
my not wanting inspite of {by me / at my hands} mirror broke
The mirror got broken by me although I did not want to do it.

3.0 Inadequacy of the Semantic Criterion.

On the basis of the discussion in section (2.0)-(2.4) it may seem plausible to assume that the choice of the postpositions is determined by semantics, i.e., se 'by' is used to express direct agency while (ke) dwārā 'by' is used to express indirect agency of the ex-subject in carrying out the act expressed by the verb. However, this hypothesis faces the following problems. (a) Although it predicts such examples as (1) and (2) where the postpositions are in complementary distribution, it does not predict the mutual interchangeability of the postpositions in (3). (b) This hypothesis fails to explain why in a number of cases where direct involvement is clear, ke dwārā 'by' is used as opposed to se 'by'. Consider the following example.

(29) parantu ve sab ek vyakti-lekhak dwārā apne hī
but they all one individual-writer by self's really

liye apne sāmne rakhe gae praśna hẽ
for self's before put went questions are
But those really are the questions put forward by an individual writer before himself for his own sake. (Mohan Rākesh: Warīs 1972. p.1)

If direct involvement of the ex-subject vyakti-lekhak 'individual writer' is explicitly negated, the sentence presents a contradiction (29a) which indicates that the direct involvement of the ex-subject is implied in (29).

(29a) ???parantu ve sab ek vyakti-lekhak dwārā apne
but those all one individual-writer by self

hī liye apne sāmne rakhe gae praśna hẽ
really for self before put went questions are

lekin (ve praśna) vyakti-lekhak ne khud
but (those questions) individual-writer Ag. self

apne sāmne nahī rakhe (hẽ)
self's before not put (are)
But those are really the questions put forward by an individual writer before himself for his own sake. However, (those questions) are not put forward by the individual writer himself.

The hypothesis mentioned above fails to explain why (ke) dwārā 'by' as opposed to se 'by' is chosen in this context.

4.0 Pragmatics

In what follows it shall be pointed out that the facts about the distribution of se 'by' and ke dwārā 'by' can be explained in a simple fashion if pragmatic information is taken into account.

First, consider example (1) which expresses capabilitative meaning. Generally, such sentences imply direct involvement of the ex-subject in carrying out the act expressed by the verb. As mentioned earlier in the discussion (c.f. section 2.0), the capability of the ex-subject is determined by subject-internal factors such as a headache, pain, state of mind, etc. Therefore, pragmatically it is almost impossible to assume indirect involvement of the ex-subject since the ex-subject's internal conditions (his capability/incapability) are directly responsible in carrying out the act expressed by the verb. Thus, it is only as expected that se 'by' is used obligatorily in sentences expressing capabilitative meaning. Consider example (30) taken from the Hindi story Rozgār written by Mohan Rākesh. The use of (ke) dwārā 'by'

is blocked in this case. Also, notice that pragmatically it is not possible to interpret indirect involvement of the ex-subject in carrying out the act in (30), i.e., it is not possible to conceive that the ex-subject mɛ̃ 'I' is indirectly responsible for carrying out the act of eating cold meat.

(30) mujh se dopahar ke vaxt roz ṭhaṇḍā goš̃t nahĩ̃ khāyā jātā
me by afternoon of time everyday cold meat not ate goes
I can not eat cold meat in the afternoon everyday.
(Literally, cold meat is not eaten by me everyday in the afternoon.) (Mohan Rākesh: Rozgār: Wāris. 1972.p.48)

Now let us consider the case of example (17), where (ke) dwārā 'by' is obligatorily used and se 'by' is blocked. Pragmatically, acts such as printing of magazines (cf. (17)), newspapers, etc., building houses, etc., are only indirectly carried out by the press owners and building contractors, respectively. Therefore, in order to express indirect involvement of the ex-subject, it is only as expected that the postposition (ke) dwārā 'by' is used and se 'by' is blocked.

Now consider the cases such as (3) where both se 'by' and (ke) dwārā 'by' can be used interchangeably. If the speaker of (3) is a news reporter and does not know whether or not the ex-subject, i.e., ministers, were directly involved in the act, then, he would use (ke) dwārā 'by' and se 'by' interchangeably.

Another possible case where se 'by' and (ke) dwārā 'by' can be used interchangeably is one where it is not important to the speaker whether or not the ex-subject was directly involved in carrying out the act. Consider example (31).

(31) jān {se / ke dwārā} usko kaī ciṭṭhiyā̃ bhejī gaī thĩ̃
John by him to many letters sent went aux.

par us ne koī jawāb nahĩ̃ diyā
but he Ag. any answer not gave
Many letters were sent to him by John but he did not answer.
(Literally, he did not give any answer at all.)

If it is not important to the speaker whether or not John, himself mailed the letters, then he would use either (ke) dwārā 'by' or se 'by'.

4.1 Style

It is observed that (ke) dwārā 'by' is used in a more formal style in Hindi. In contrast to this, the use of se 'by' is more common in colloquial language. The distribution of the postpositions on the basis of style is not unexpected. Since (ke) dwārā 'by' expresses only indirect involvement of the subject, pragmatically it is more suitable in formal style to denote indirect agency as in the following sentence.

(32) sarkār ke dwārā šyām ko sūcnā dī gaī ki
government by Šyam to information gave went that

vah hartāl mẽ bhāg na le
he strike in participation neg. take
Šyam was informed by the government (literally, the information was given by the government) that he should not participate in the strike.

Note that the government is only indirectly involved in carrying out the act of giving the information and it is more likely that Šyam received the information directly from his boss/office. In order to indicate indirect agency of the government in this case the use of (ke) dwārā 'by' is more suitable than se 'by'.

It is observed that (ke) dwārā 'by' has become a marker of formal style in Hindi. Evidence to support this hypothesis comes from the newspaper register of Hindi, where (ke) dwārā 'by' is used in almost 100% of the cases. This situation can be explained on the following grounds: (a) (ke) dwārā 'by' is the marker of formal style and (b) (ke) dwārā 'by' expresses a non-committal/neutral attitude of the reporter about whether or not the ex-subject directly performed the act. Notice that by using (ke) dwārā 'by' the reporter expresses only an indirect involvement of the ex-subject in carrying out the act. Consider examples (33) and (34). They are taken from Navbhārat Times, one of the leading Hindi newspapers in India.

(33) sarkār dwārā sabhī sangat bātõ kā dhyān rakhā jātā hɛ̃
government by all relevant matters of care kept goes aux.
All the relevant matters are taken care of by the government. (Navbhārat Times, March 9, 1979)

(34) ārthik višeṣagyõ dwārā die gae sujhavõ par bhī
finance experts by gave went suggestions on also

vitta mantrālay baṛī sakriytā se vicār kar rahā hɛ̃
finance ministry very actively thinking do prog. aux.
The finance ministry is actively considering the suggestions given by the economists. (Navbhārat Times, Feb. 28, 1979)

Now consider the case of example (29) where (ke) dwārā 'by' is used although direct involvement of the ex-subject is obvious. In this case 'style' overrides the semantics of the postpositions. Since (ke) dwārā 'by' is a marker of formal style it is used in (29). (29) is taken from the preface of the novel Wāris written by Mohan Rākesh. A preface of a novel is generally written in formal language. Hence it is not unexpected that (ke) dwārā 'by' is used even when semantics does not allow for it.

5.0 Conclusion

The major points in the preceding discussion can be summed up as follows:

(a) Se 'by' and ke dwārā 'by' are not always mutually interchangeable.

(b) The two postpositions are syntactically similar but semantically different from each other. This hypothesis is supported by independently motivated evidence from other constructions in the language.

(c) The conditions which determine the choice of one postposition as opposed to the other can not be defined purely in terms of the semantics of the postpositions. A number of pragmatic facts such as speakers' intentions/knowledge, style/register, etc. play a crucial role in determining the choice of the postpositions.

(d) The hypothesis in this paper supports the general claim made in Davison (1975), Green (1975) and Morgan (1978), namely, a number of linguistic facts can not be explained without the relevant pragmatic information. This hypothesis, however, raises a theoretical question as to how to formally represent the interaction of syntactic, semantic, and pragmatic factors in a grammatical description of a language.

(e) The discussion on the causative sentences in Hindi is relevant for characterizing an underlying structure for causative sentences. It is pointed out that the embedded sentence in the underlying structure of a causative sentence in Hindi does not necessarily express direct agency of the causee in carrying out the act expressed by the verb. Also, it is shown that the choice of postpositions in causative sentences depends on whether or not direct agency of the causee is to be expressed.

(f) The discussion in this paper poses a question for the diachronic study of the language, i.e., whether or not se 'by' and ke dwārā 'by' have always been used to indicate direct vs. indirect involvement of ex-subject in Passive sentences in the history of Hindi, or whether dwārā 'by' has only recently been introduced in the language. In this context, earlier literature in Hindi needs to be investigated.

NOTES

* An earlier version of this paper was presented at South Asian Languages Roundtable held at the university of Illinois April 8, 1978. I am greatly indebted to Professor Yamuna Kachru for her invaluable suggestions and criticisms.

[1] In Pandharipande (1979) it is pointed out that the capability/incapability of the ex-subject in Passive sentences in Hindi is determined by factors such as headache, hatred, happiness, worry, physical/psychological pain, etc. These factors are labelled as subject-internal conditions and the capability determined by such conditions is labelled as internally-determined capability. Thus, a Passive sentence in Hindi, such as

mujh se āge jāyā nahĩ gayā
'I could not go ahead.'

implies that the incapability of the ex-subject was determined by subject-internal conditions such as the ones mentioned above and not by external

conditions such as weather conditions, road conditions, accident, etc. The following sentences support these assumptions. Notice that when it is explicitly mentioned that the capability of the ex-subject is determined by an internal condition, (i.e., headache), (i) is fine. In contrast to this, when it is mentioned that the capability is determined by an external condition, (i.e., accident), (ii) presents a contradiction.

(i) mere sir mẽ itnā dard thā ki mujh se āge jāyā
my head in so much pain was that me by ahead went

nahĩ gayā
not went
I had such a headache that I could not go ahead.
(Literally, there was so much pain in my head that I could not go ahead.)

(ii) ???rāste mẽ eksīḍeṇṭ huā thā isliye mujh se
road in accident happened aux. therefore me by

āge jāyā nahĩ gayā
ahead went not went
An accident had taken place on the road, therefore, I could not go ahead.

[2]In sentences such as (25), the postpositions se 'by' and ke hāthõ 'at the hands of' are semantically similar to each other. In such cases it is the order of the causees in the sentence which determines direct vs. indirect agency of the causees, i.e., in (25) the order of causees is as follows:

Causer Causee + se Causee + ke hāthõ

In this case, the causee first in order is felt to be the indirect agent while the causee second in order is felt to be the direct agent. This becomes clear from the following sentence where Causee + ke hāthõ precedes the Causee + se. Notice that now the Causee + ke hāthõ is the indirect agent while Causee + se is the direct agent. Contrast the following sentence with (25).

rām ne mohan ke hāthõ šyām se kām karwāyā
Ram Ag. Mohan at the hands of Šyam by work do+caus+past
Ram made Mohan get the work done by Šyam.

[3]Notice that (29) is not a Passive sentence. (29) is a special type of active non-passive construction in Hindi, which requires the agent of the act to take the postposition se 'by'. This construction expresses a non-volitional act. In other words, it is implied in sentences such as (29) that the subject did not perform the act intentionally.

REFERENCES

DAVISON, Alice. 1975. Indirect speech acts and what to do with them. In P. Cole and J. L. Morgan, eds.: Syntax and Semantics, Vol. 3. Speech Acts. Academic press.

GREEN, Georgia. 1975. How to get people to do things with words: the whimperative question. In P. Cole and J.L. Morgan, eds.: Syntax and Semantics, Vol. 3. Speech Acts. Academic press.

GURU, Kamtaprasad. 1952. Hindi Vyākraṇ. Banaras. Rajkamal Prakashan.

KACHRU, Yamuna. 1966. An introduction to Hindi syntax. Department of Linguistics, University of Illinois. (mimeograph)

_____. 1972. Notes on grammatical categories and participant roles in Hindi-Urdu sentences. In Mohammad Jazayery, Edgar C. Polomé, and Werner Winter, eds: Linguistic and Literary Studies in Honor of Archibald A. Hill, Vol. 4, pp. 309-318. Mouton. The Hague. 1979.

_____. 1973. Causative sentences in Hindi revisited. In B. Kachru, et. al., eds: Issues in Linguistics. Papers in honor of Henry and Renée Kahane. Urbana, University of Illinois press.

KEENAN, Edward. 1976. Towards a universal definition of "subject". In Charles N. Li, ed.: Subject and Topic. Academic press.

MORGAN, Jerry, L. 1978. Two types of convention in indirect speech acts. In Peter Cole, ed.: Syntax and Semantics, Vol. 9. Pragmatics. Academic press.

PANDHARIPANDE, Rajeshwari. 1978. Exceptions and rule government: the case of the Passive rule in Hindi. Studies in the Linguistic Sciences. Vol. 8: No.1.

_____. 1979. Passive as an optional rule in Hindi, Marathi, and Nepali. (to appear) South Asian Language Annual, Vol. 1. Department of Linguistics, University of Illinois, Urbana.

RAKESH, Mohan. 1972. Waris: Mohan Rakesh kī kahāniyā, Vol. 3. Delhi, Rajpal and Sons.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

QUANTIFIER FLOATING IN THAI AND THE NOTIONS CARDINALITY/ORDINALITY

Soranee Wongbiasaj

Quantifier Floating in Thai as used in this paper refers to the rule that moves a quantifier expression of some sort from immediately following the head noun to the end of the clause. In this paper I mainly intend to show the connection among the noun phrase word order, the semantic notions cardinality/ordinality and the application of Quantifier Floating in Thai. The first part presents the quantification system and the use of classifiers in the language. Then a generalization is given as to what kinds of quantifier expressions can be moved by QF and what cannot. It is also shown that QF in Thai is sensitive to the semantic factors cardinality/ordinality, so that it does not apply arbitrarily.

I. Quantifier Floating (QF) in Thai moves quantifier expressions (QEx) from right after the head noun to the end of the clause. QEx's are expressions like:

lǎay several	classifier	'several (ones)'
baaŋ some	"	'some (ones)'
thúk all	"	'all (ones)'

including cardinal numbers preceded or followed by a classifier (clf.) such as:

sìp ten	clf.	'ten (ones)'
clf.	nɯŋ one	'a (one)'

Examples of quantifier-floated sentences are:

(1.a) dèk thúk khon mây sabaay
child all clf. not well
'All of the children are not well'.

(b) dèk mây sabaay thúk khon

(2.a) dèk lǎay khon mây sabaay
several
'Several of the children are not well.'

(b) dèk mây sabaay lăay khon

(3.a) dèk baaŋ khon mây sabaay
some
'Some of the children are not well.'

(b) dèk mây sabaay baaŋ khon

(4.a) dèk sìp khon mây sabaay
ten
'Ten children are not well'.

(b) dèk mây sabaay sìp khon

(5.a) dèk khon nʉŋ mây sabaay
one
'A child is not well.'

(b) dek mây sabaay khon nʉŋ
Ordinal numbers cannot be moved by QF.

(6.a) dèk khon thîi cèt mây sabaay
clf. COMP. seven
'The seventh child is not well.'

(b) *dèk mây sabaay khon thîi cèt
Neither can a QEx with a demonstrative modifier.

(7.a) dèk khon níi mây sabaay
this
'This child is not well.'

(b) *dèk mây sabaay khon níi

As for the quantifier tɛ̀ɛla 'each', the judgements of native speakers vary. One out of four of my informants[1] accepts (8.b) and (9.b). The rest find them awkward.

(8.a) nay chán níi dèk tɛ̀ɛla khon mii khwamsămâat thâw kan
in class this have competence equal mutual
'In this class, each of the children is equally competent.'

(b) ?? nay chán níi dèk mii khwamsămâat thâwkan tɛ̀ɛla khon

(9.a) dèk tɛ̀ɛla khon chɔ̂ɔp kin ahăan tàaŋ chanít kan
like eat food different kind
'Each of the children likes different kinds of food.'

(b) ?? dèk chɔ̂ɔp kin ahăan tàaŋ chanít kan tɛ̀ɛla khon

Two out of four think (10.b) is acceptable whereas the other two think it is questionable.

(10.a) dèk tɛɛla khon mii pan hăa tàaŋkan pay
have problem different go
'Each of the children has a different problem.'

(b) ? dèk mii panhăa tàaŋkan pay tɛɛla khon

II. The application of QF is still problematical, especially in a language like English, in which there is more than one position a quantifier can float into. Dougherty (1969, 1970) proposes two separate movements for (11)[2].

(11.a) Each of the men will give five dollars.
(b) The men each will give five dollars.
(c) The men will each give five dollars.
(d) The men will give each five dollars
(e) The men will give five dollars each.
(Dougherty, 1969, p. 508)

According to him, (11.b) is derived from a sentence similar to (11.a) through the application of Quantifier Postposition. (11.c-e), on the other hand, are derived from (11.b) through Quantifier Movement.

Postal (1974, 1976) derives sentences like (11.b-c) from a structure like (11.a) through the application of a single movement rule called Quantifier Postposing (or Quantifier Floating in Postal 1976)[3], plus a rule that makes the quantifier part of the VP. The Quantifier Postposing Transformation is to be distinguished from another movement rule called Each Shift, which, he claims, transports each from one NP to the end of a usually numerically quantified NP whose numerical quantifier is under the scope of each. This latter rule is supposed to be responsible for the occurence of each at the end of a sentence like (11.e).

The question as to how many rules are involved in deriving a quantifier-floated sentence does not arise in Thai. There seems to be only one rule involved in the postpositioning in Thai since a QEx always starts off from the position right after the head NP[4] and always ends up in the rightmost position of a clause. Thai QF, therefore, operates in more or less the same fashion as Postal's Each Shift. However, the two rules are different from each other in that the latter is restricted to moving only each, whereas the class of elements movable by the former is much larger, as shown in (1-10). The main point of this paper is to give a generalization as to what kinds of elements get moved by QF in Thai and to show that there is some semantic connection among these elements so that QF does not apply arbitrarily.

III.1. In order to understand the application of QF in Thai, one needs to look at the Quantification system as well as the use of classifiers in this language.

The system of numerical classifiers is used in a language which numerically quantified noun phrases appear in the form of a partitive construction on the surface. It has been pointed out in Lehman (1974) that in English, the existence of an expression like:

(12) Of the men, I saw three and you saw four.

seems to require that the underlying representative of a noun be a partitive construction of some kind in which the head is a pro-element (variable), usually realized as one. However, unlike a language with a system of classifiers, such partitive constructions do not necessarily show up on the surface in English, whereas the equivalents of the English one house and two stones in Thai and Burmese are always (13) and (14), respectively.

Thai

(13.a) baan nɯ̀ŋ lăŋ 'house one one'
house one clf.

(b) hĭn sɔ̌ɔŋ kɔ̂ɔn 'stones two ones'
stone two clf.

Burmese

(14.a) ?ein ta?ein
house one house

(b) cauk hnaloun:
stone two clf.

(The Burmese examples are taken from Lehman, 1974.)

In (13) and (14), the pro-element one is lexicalized as a partially specified classifier appropriate to the noun class head or as a 'partial semantic specification of the noun class of the head', as phrased by Lehman (1974).

Besides cardinal numbers, classifiers in Thai are also used with demonstratives, attributive modifiers including relative clauses, quantificative modifiers, and ordinal numbers. As has been suggested by Lehman (1974), all classifier expressions are actually lexical realizations of the same sort of partitive operation, and in each case the subset picked out for comment by the partition is, in effect, bound as one or more variables by a quantifier. In a language like Thai, such partitive expressions with classifiers are needed because an unquantified NP (e.g., an NP that is not specific or definite) is always understood as a name of a class or a set. What a classifier expression does is partition a set into subsets, thus, quantifying each subset either in a cardinal or an ordinal fashion.

III.2 The elements that come with a classifier in a classifier expression can be basically divided into two groups: those that precede a classifier in the order NP X Clf., and those that follow a classifier in the order NP Clf. X. The elements in the first group are cardinal numbers in the ordinary sense and such quantifiers as thúk 'all', baaŋ 'some', lăay 'several', as in (1-4). Those in the second group are ordinal numbers, demonstrative and attributive modifiers, including relative clauses, as in (6-7). (As for nɯ̀ŋ 'one' in (5) and tɛ̀ɛla 'each' in (8-10), see section III.3)

The fact that cardinal numbers and quantifiers precede a classifier and that ordinal numbers and modifiers follow it appears not to be accidental. There seems to be a systematic connection between word order and the various things that come with a classifier. The elements in the first group can all be subsumed under the generalization of cardinality. In fact, they differ only in that quantifier expressions partition a set into subsets of indefinitely stated sizes, whereas cardinal numbers partition a set into subsets of which one or more is of definitely stated size. In this sense, the former is as 'cardinal' as the latter. In anycase, what is being referred to is the <u>size</u> (cardinality) of some, possibly unspecific, (sub-)set of a class. Moreover, since this operation appears to take as its target the set of all subsets of a class, it appears that it is an operation upon power sets.

That all these expressions are notionally cardinal is seen in the fact that any of them can appear in answer to the question 'how many'.

(15) ca sɯ́ɯ naŋsɯ̌ɯ kìì lêm 'How many books will you buy?'
fut. buy book how many clf.

(a) ca sɯ́ɯ (naŋsɯ̌ɯ) sìp lêm
ten
(b) " " lǎay "
several
(c) " " thúk "
all
(d) " " baaŋ "
some

'I will buy (a) ten of them.
(b) several "
(c) all "
(d) some "

Furthermore, they can all be preceded by just those intensifiers that can also precede true cardinal numbers.

(16.a) ca sɯ́ɯ naŋsɯ̌ɯ tâŋ {sìp / lǎay} lêm
as many as
'I will buy as many as {ten / several} books.'

(b) ca sɯ́ɯ naŋsɯ̌ɯ mòt {sìp / thúk} {lêm}
exhausetively
'I will buy {the whole ten books. / fully all the books.}'

(c) ca sɯ́ɯ naŋsɯ̌ɯ ìik {sìp / baaŋ} lêm
more
'I will buy {ten / some} more books.'

As for the elements that follow a classifier, they are subsumed under the notion ordinality, owing to the fact that they all impose, directly or indirectly, a boundary between one particular member of a set and all others by singling out the former. (17), for instance, directly singles out a particular book from the others in a set of books by making it specific and definite.

(17) naŋsŭu lêm thîi cèt 'the seventh book'
book clf. COMP. seven

(18), on the other hand, does the singling out in a more obscure fashion.

(18) naŋsŭu lêm yày 'the/a big book'
big

'The/a big book' certainly entails a partition of the set of books having regard to big ones vs. others but still it singles out individual elements of the intended (sub-)set to comment on and it says nothing about cardinality (size). This type of partition is actually a cross-classification of individual set members. Set-theoretically, each member of a set that has been thus singled out, can be said to be some ith and/or jth element of that set.

These expressions are, thus, answers to the question 'which'.

(19) ca sŭu naŋsŭu lêm nǎy 'Which/what sort of/book
fut. buy book clf. which will you buy?'

(a) ca sŭu (naŋsŭu) lêm yày
big

(b) " " " nán
that

(c) " " " thîi cèt
COMP. seven

'I will buy (a) the big one.'
(b) that one.'
(c) the seventh book.'

The connection among the notions cardinality/ordinality and numerical, demonstrative, attributive quantifiers and word order is perhaps somewhat more obscure in English, owing to lack of a classifier system. In Thai, from the examples considered so far, the generalization seems to be that cardinals precede a classifier and ordinals follow.

III.3 The above generalization, nonetheless, does not always hold. There are two expressions which seem not to follow this rule.

First, nèŋ 'one' can precede or follow a classifier.

(20.a) naŋsŭu nèŋ lêm
book one clf.

(b) naŋsɯ̌ lêm nɯŋ (ˋ)
book clf. one

The meaning of (20.a) and (20.b) is, however, not quite the same. (20.a) means 'one book' -- a cardinally quantified noun -- just as would be expected from its word order. (20.b), on the other hand, has been glossed in Lehman (1974) as 'some book or other', and, thus, has the ordinal meaning of the 'ith or jth book'. This meaning, sometimes glossed as 'a book' is obvious in (21) and (22). Notice, incidentally, that when nɯŋ follows a classifier, the low tone is almost always reduced to mid, especially in conversation.

(21) chán yàak sɯ́ɯ naŋsɯ̌ lêm nɯŋ tɛ̀ɛ yaŋ mây ruu ca
I want buy but still not know fut.
sɯ́ɯ lêm nǎy dii
buy clf. which good
'I want to buy a book but I still don't know which one to buy yet.'

(22) chán yàak sɯ́ɯ naŋsɯ̌ lêm nɯŋ lem thîi Joe khǐan ŋay
I want buy clf. COMP. write prt.
'I want to buy a (certain) book; it's the one Joe wrote.'

From these examples, since NP clf. nɯŋ singles out a member of a set from the rest, one might conclude that it is an ordinal, just as is to be expected from its word order. Nonetheless, it has been observed that NP clf. nɯŋ behaves like cardinal numbers in some respects, which ordinals normally do not. First, it answers the question 'how many'.

(23) ca sɯ́ɯ naŋsɯ̌ kìi lêm 'How many books will you buy?'
how many
(a) ca sɯ́ɯ (naŋsɯ̌) sìp lêm
ten
(b) " " lêm nɯŋ
(c) " " lêm thîi cèt
COMP. seven

'I will buy (a) ten of them'
(b) a book.'
(c) the seventh book.'

(23.c) is unacceptable as an answer to the above question.

Then, it can follow intensifiers such as sák 'at least', tâŋ 'as many as', which can normally precede cardinal numbers but not ordinals.

(24.a) ca sɯ́ɯ naŋsɯ̌ sák sɔ̌ɔŋ lêm
at least two
(b) " " "
(c) " " " lêm thîi cèt
'I will buy at least (a) two books.'
(b) a book.'
(c) *the seventh book.'

(25.a) ca sɯ́ɯ naŋsɯ̌ɯ tâŋ sɔ̌ɔŋ lêm
as many as
(b) " " " lêm nɯŋ
(c) " " " lêm thii cèt

'I will buy as many as (a) two books.'
(b) a book.'
(c) the seventh book.'

Finally, it can be conjoined with other cardinal numbers.

(26) khǎw ca sɯ́ɯ naŋsɯ̌ɯ lêm nɯŋ ré́ sɔ̌ɔŋ lêm
he fut. buy or two
'He will buy a book or two.'

However, the fact that naŋsɯ̌ɯ lêm nɯŋ can occur with elements that usually come with cardinals does not necessarily mean that the expression is a true cardinal. In fact, it can still be treated as an ordinal. That it has such cardinal properties might be due to the fact that cardinality and ordinality overlap (pragmatically, perhaps) at the level of singularity. That is, when one refers to 'some ith or jth book (but not both)', the size of the subset is pragmatically implied (or entailed). This might be the reason why NP clf. nɯŋ, with all its ordinality, can also answer the question 'how many' (in a less direct way than NP nɯ̀ŋ clf., maybe), can occur with cardinal intensifiers, and can be conjoined with other cardinals, as has been shown in (23.b-25.b) and (26).

It has been pointed out to me by F. K. Lehman (personal communication) that the same problem exists in English as in Thai. The English ordinal expression 'some (odd) book' could, at least marginally, be an answer to the question 'how many books will you buy?'. It could also in certain situations be preceded by cardinal intensifers like atleast, up to, not more than, or even as many as. Also the expression 'a book or two' is semantically closer to the ordinal 'a book or so' than the true cardinal 'one or two books.' Therefore, it is not yet conclusive that one should treat NP clf. nɯŋ as a cardinal. In fact, the arguments point to the conclusion that it is ordinal by definition and also by word order, but, because of its being singular, entails cardinality and, thus, is cardinal by entailment.

The second element that does not seem to follow the word order generalization is the distributive quantifier tɛ̀ɛla, which is sometimes glossed as 'each' (Sethaputra, 1975), sometimes as 'each and every' (Haas, 1964), the reason being that it has a distributive property and yet refers to the strict totality of a set (cf. Vendler, 1967, chapter 3). Notice that (27) and (28) are semantically anomalous, in which the second part of the sentence contradicts the reference to the totality of a set in the use of tɛ̀ɛla. (# is used here to mark semantic anomalies.)

(27) # phɔ̂ɔmɛ́ɛ cɛ́ɛk ŋən lûuk tɛ̀ɛla khon tɛ́ɛ mii lûuk
parents give money kid but there
away is
khon nɯŋ mây dây ŋən
clf. one not get money

'The parents gave away some money to each of their kids but one kid does not get any.'

(28) # dèk nay chán tɛ̀ɛ̀la khon ɔ̀ɔk pay lên khâŋɲɔ̂ɔk tɛ̀ɛ mii
kid in class out go play outside but there is
dèk khon nɯŋ lɯ̌a yùu nay hɔ̂ŋ
one left stay in room
'Each of the kids in the class went out to play but there was one kid left in the room.'

Furthermore, from the etymological study that I have done, it appears that tɛ̀ɛ̀la might come from a combination of two separate words: tɛ̀ɛ 'but, only, exclusively' and lɛ́ɛw (whose usual contraction is lá or la) 'to be finished, to complete'. Tɛ̀ɛ̀la, therefore, literally means 'a complete setting aside (of elements in a set).' Metaphorically, it seems to refer to the method of taking out members of a set, one at a time, to exhaustion. Notice that, if I am correct, tɛ̀ɛ̀la is very close in meaning to the collective quantifier thúk 'all' in the sense that they both refer to an exhaustion of the (unstated) size of a set, and, thus, might be given a more direct gloss as 'all, taken one at a time' (as opposed to 'all, taken as a lump sum'). That means tɛ̀ɛ̀la has a cardinal meaning, as is to be expected from its word order.

Nonetheless, it is obvious that tɛ̀ɛ̀la has a distributive property, from which comes its English gloss 'each' or 'one at a time'. This suggests that it is not so far from being ordinal as are other cardinals, since with its distributive property, it seems to single out every ith or jth member of a set in turn. Therefore, one might say that tɛ̀ɛ̀la is an ordinal in a sense. It might have a lesser degree of ordinality than any other ordinals that have been considered so far, since it can never answer the question 'which'.

(29) ca sɯ́ɯ naŋsɯ̌ɯ lêm nǎy 'Which book will you buy?'
*ca sɯ́ɯ (naŋsɯ̌ɯ) tɛ̀ɛ̀la lêm
'I will buy each of them'.

In spite of this, its ordinality can not be ignored. Therefore, one might want to say that tɛ̀ɛ̀la is cardinal by definition but at the same time has some degree of ordinal entailment.

To conclude, the discussion on NP clf. nɯŋ and NP tɛ̀ɛ̀la clf. shows that these two expressions turn out not to be exceptions to the generalization on word order of cardinals and ordinals, since neither of them can be considered an absolute cardinal or ordinal. As a matter of fact, they support the generalization to a certain extent. The former appears to be ordinal, as would be expected from its word order, with some cardinal entailment. The latter, on the other hand, turns out to be cardinal, as, again, would be expected from its word order, but also has some degree of ordinality.

IV. With all these points taken into consideration, I would like to draw a connection between the notions cardinality/ordinality and the QF transformation in Thai.

It has been shown in section I that those elements that can be moved by QF are cardinal numbers and quantifiers plus classifiers; and those that resist the application of QF are ordinal numbers, demonstratively and attributively modified NP's including relative clauses. That is, QF in Thai seems to be restricted to moving only cardinals and never ordinals. Therefore, it applies in (1-4) without difficulty, yielding the (b) sentences from the (a)'s. The ungrammaticality of (6.b) and (7.b) shows that the rule does not operate on ordinals. (5) and (8-10) present more interesting cases. In (5), inspite of its ordinality, NP clf. nuŋ, which has been argued to be an ordinal with some cardinal entailment, allows QF to apply. In (8-10), on the other hand, NP tɛ̀ɛla clf., which has been shown to be cardinal with an ordinal entailment resists QF. In these two cases, it turns out to be the entailment of each expression that triggers or constrains the application of QF. (8), (9) and (10), in particular, receive various, indecisive judgements from native speakers. This may be because the degree of ordinality in the entailment of this expression as perceived by each native speaker varies. For those who accept (8.b), (9.b) and (10.b), the ordinal entailment in the expression NP tɛ̀ɛla clf. may be getting weaker, and, thus, does not totally block the application of QF. For those who reject those sentences, such an entailment may still be strong and clear enough to block the rule. This way, the native speakers' disagreement on (8-10) is accounted for. However, one interesting point remains obscure. That is, why, in these two particular cases, it is the entailment, not the real meaning of the expressions, that blocks or triggers the application of the rule. To put it the other way, why is QF in Thai sensitive to the entailment of these two expressions rather than the lexical or truth-functional meaning? For the time being, the question will be left for further research.

NOTES

[1]In writing this paper, I have used as my informants, Thai students, including myself, from different disciplines: two in Linguistics, one in TESL and the other in Economics. Three are female and one is male. Three of them have been here for more than two years, the other has just arrived.

[2]The two rules are formulated as follows:

The Quantifier Postpostion (QP) Transformation:

SD: $((\quad Q \quad M_1) (\quad M_2))$
$\quad S \quad NP[-dis] \quad VP$

SC: $((\quad M \quad) (\quad Q \quad M_2))$
$\quad S \quad NP \quad VP[-dis]$

where $Q_{[-dis]}$ = each, all, both

M = variable

(Dougherty, 1970, p. 876)

The Quantifier Movement (QM) Transformation:

SD: $(_S\ M_1\ \underset{[-dis]}{Q}\ Aux\ M)_2$

SC: $(_S\ M_1\ Aux\ \underset{[-dis]}{Q}\ M_2\ )$

where $\underset{[-dis]}{Q}$ = each, all, both

M = variable

(p. 877)

[3]The Quantifier Postposition (or Quantifier Movement) Transformation is not explicitly formulated in Postal (1974, 1976). It is only described as moving the universal quantifiers each, all and both out of the NP to the position following it. For more discussion and details, cf. Postal (1974), p. 111.

[4]It is not surprising that a quantifier expression always starts off from the position right after the head noun. This is due to the fact that in Thai, an NP modifier of any sort always follows its head noun.

REFERENCES

DOUGHERTY, R. C. 1969. An Interpretive Theory of Pronominalization. Foundations of Language 5, p. 488-519.

DOUGHERTY, R. C. 1970. A Grammar of Coordinate Conjoined Structures:I. Language 46:4, p. 850-898.

HAAS, M. 1964. Thai-English Students' Dictionary. Stanford University Press, Stanford.

LEHMAN, F. K. 1974. Aspects of a Formal Theory of Noun Classifiers. In press in Studies in Language 3:2.

POSTAL, P. M. 1974. On Raising. The MIT Press, Cambridge.

POSTAL, P. M. 1976. Avoiding Reference to Subject. Linguistic Inquiry 7:1, p. 151-181.

SETHAPUTRA, S. 1975. New Model Thai-English Dictionary. Thai Watanapanit, Bangkok.

VENDLER, Z. 1967. Linguistics in Philosophy. Cornell University Press. Ithaca, New York.

Studies in the Linguistic Sciences
Volume 9, Number 2, Fall 1979

RESEARCH AND PUBLICATIONS IN AFRICAN LINGUISTICS AT THE UNIVERSITY OF ILLINOIS, 1970-79

Eyamba G. Bokamba

Since the inception of the African Language and Linguistic Program in the Department of Linguistics in 1969, there has been a vigorous research effort in all aspects of the study of African languages. This is evidenced in the students' (st.) and faculty's (fa.) research and publications below which cover most of the major areas of linguistics. Individuals interested in some of these publications should write directly to the authors in question.

ABASHEIKH, Mohammad I. (st.) 1976. Reflexivization in Chimwi:ni. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth. Urbana: Department of Linguistics, University of Illinois.

_____. 1978. The grammar of Chimwi:ni causatives. University of Illinois doctoral dissertation, Urbana. Ann Arbor: University Microfilm International.

AJOLORE, Olusola. (st.) 1972. Repetition in Yoruba poetry. Current trends in stylistics, edited by Braj B. Kachru and Herbert F.W. Stahlke, 183-206. Edmonton: Linguistic Research, Inc.

_____. 1974a. Verb-nominal contraction in Yoruba. Proceedings of the Third Annual Conference on African Linguistics, Bloomington, Indiana, edited by Erhart Voeltz. African Language Monography Series. The Hague: Mouton and Co.

_____. 1974b. Learning to use Yoruba focus sentences in a multilingual setting. University of Illinois doctoral dissertation. Ann Arbor: University Microfilm International.

AWOYALE, Yiwola. (st.) 1974. Studies in the syntax and semantics of Yoruba nominalization. University of Illinois doctoral dissertation. Ann Arbor: University Microfilm International.

BECKER, Lee. (st.) 1977. Leftward movement of high tone. Paper presented to the Linguistics Seminar, Department of Linguistics, University of Illinois, Urbana. Mimeographed.

_____. 1978a. The putative phrase penultimate accent in Haya and the leftward movement of high tone. Paper read at the Ninth Annual Conference on African Linguistics, Michigan State University, East Lansing.

_____. 1978b. Once again downdrift: evidence from Benue Congo. Paper presented to the African Language Project. Ms.

BOKAMBA, Eyamba G. (fa.) 1974. A counter example to Bach's "questions." Studies in African Linguistics. Supplement #5: 49-66

_____. 1975. Observations on the immediate dominance constraint, topicalization, and relativization. Studies in African Linguistics 6.1-22.

_____. 1976a. Authenticity and the choice of a national language: the case of Zaire. Présence Africaine 99/100.104-43. Also in Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth, 23-64.

_____. 1976b. Relativization in Bantu languages revisited. The Second LACUS Forum 1975, edited by Peter A. Reich, 292-310. Columbia, S.C.: Hornbeam Press.

_____. 1976c. On the syntax and semantics of derivational verb suffixes in Bantu languages. Mid-America Linguistics Conference Papers, edited by Frances Ingemann, 38-50. Lawrence, KS: The Linguistics Department, University of Kansas.

_____. 1976d. Question formation in some Bantu Languages. Indiana University doctoral dissertation, Bloomington, Indiana. Ann Arbor: University Microfilm International.

_____. 1976e. On the syntax and semantics of Wh-Questions in Kikongo and Kiswahili. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth, 65-88.

_____. 1977. The impact of multilingualism on language structures: the case of Central Africa. Anthropological Linguistics 19:5.181-202.

_____. 1978a. A mirror-image phenomenon in Bantu languages. Paper read at the Ninth Annual Conference on African Linguistics, Michigan State University, East Lansing. Mimeographed.

_____. 1978b. On the necessity of a bilingual educational policy in Sub-Saharan Africa. To appear in Language policies in African education: Proceedings of the Fifth Annual African Studies Symposium. Washington, D.C.: University Press of America.

_____. 1978c. The Africanization of English. To appear in The other tongue: English in non-native contexts, edited by Braj B. Kachru. Rowley, MA: Newbury House.

_____. 1979a. Ekolongonelo ya Lingala: an introductory course. African Studies Program, University of Illinois, Urbana. Mimeographed.

_____. 1979b. Problems of multilingualism in Africa. Paper read at the International Seminar on the Languages of the World, University of North Carolina, Greensboro.

_____. 1979c. Inversions as grammatical relation changing rules in Bantu languages. Studies in the Linguistic Sciences 9,2: Relational Grammar and Semantics, edited by Jerry Morgan.

_____. 1979d. Vowel harmony and assimilation in some Bantu languages. To appear in African languages and linguistics in the 1970's: Proceedings of the Tenth Annual Conference on African Linguistics, edited by E.G. Bokamba

_____. 1979e. Noun classes and agreement changes in Bantu languages. Paper presented at the Symposium on Grammatical Changes, University of Leiden, The Netherlands.

_____. 1979f. The expansion of Lingala and its social implications in Africa. Paper prepared for the African Studies Association 22nd meeting, Los Angeles, California.

_____. In preparation. Ekolongonelo ya Lingala: an intermediate course.

_____. In preparation. Aspects of Bantu Syntax. (A descriptive and theoretical analysis of several common syntactic phenomena in Bantu languages, based on data from central, eastern, and south-eastern Bantu languages.)

_____. Editor. (To appear.) Language policies in African education: Proceedings of the Tenth Annual Conference on African Linguistics.

_____. Editor. ((To appear.) African languages and linguistics in the 1970's: Proceedings of the Tenth Annual Conference on African Linguistics.

_____, and Josiah S. Tlou (fa.) 1977. The consequences of the language policies of African states vis-a-vis education. Language and linguistic problems in Africa: Proceedings of the Seventh Annual Conference on African Linguistics, edited by Paul A. Kotey and Haig Der Houssikian. Columbia: hornbeam Press.

_____, and Mallafé Dramé (st.) 1978. Where do relative clauses come from in Mandingo? Papers from the Fourteenth Regional Meeting of the Chicago Linguistic Society, edited by D. Farkas, W.W. Jacobsen, and K.W. Todrys, 28-43. Chicago Linguistic Society, University of Chicago.

_____, and Salikoko S. Mufwene.' 1979. Are there modal-auxilliaries in Lingala? Papers from the Fifteenth Regional Meeting of the Chicago Linguistic Society, edited by Paul R. Clyne, W.F. Hanks, and C.L. Hofbauer, 244-55. Chicago Linguistic Society, University of Chicago.

_____, Anne Garber (st.) and Geoffrey Rugege (st.) In preparation. An annotated bibliography of African Linguistics, 1945-1980.

CHENG, Chin-chuan (fa.), and Charles W. Kisseberth (fa.) 1979. Ikorovere Makua tonology (Part 1). Studies in the Linguistic Sciences 9:1, 31-64.

DALGISH, Gerard M. (st.) 1975. Nasal interactions and Bantu vowel initial roots: the morphological or phonological solution? Proceedings of the Sixth Conference on African Linguistics, editied by Robert K. Herbert, 68-74. Columbus: Department of Linguistics, The Ohio State University.

_____. 1976a. Locative NPs, locative suffixes and grammatical relations. Proceedings of the Second Meeting of the Berkeley Linguistic Society, 139-48.

_____. 1976b. Passivizing locatives in OluTsootso. Studies in the Linguistic Sciences 6:1.57-68.

_____. 1976c. The morphophonemics of the OluTsootsoo Dialect of Olu-Luyia: issues and implications. University of Illinois doctoral dissertation, Urbana, Illinois. Ann Arbor: University Microfilm International.

_____. 1977. Towards an explanation of diachronic and synchronic exceptions in OluTsootsoo and Kyamutwara (Haya). Language and linguistic problems in Africa: Proceedings of the Seventh Conference on African Linguistics, edited by Paul A. Kotey and Haig Der Houssikian, 412-28. Columbia: Hornbeam Press.

_____, and Gloria Sheintuch (st.) 1976. On the justification for language specific sub-grammatical relations. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth, 89-107.

DRAMÉ, Mallafé. 1977. Relative clauses in Shona. Report to African Language Project, Department of Linguistics, University of Illinois, Urbana.

_____. 1978. Language policies in Francophone West Africa. Paper presented at the Symposium on Language Policies in African Education. Linguistic Society of America's Linguistic Institute, University of Illinois. To appear in Language policies in African education, edited by E.G. Bokamba. Washington, D.C.: University Press of America.

_____. 1979a. Possession in Mandingo. Paper read at the Tenth Annual Conference on African Linguistics, University of Illinois, Urbana.

_____. 1979b. Aspects of complementation in Mandingo. To appear in Studies in the Linguistic Sciences 9,2: Relational Grammar and Semantics, edited by Jerry Morgan.

HODGES, Kathryn Speed (st.) 1976. Object relations in KiMeru causatives. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth.

_____. 1977. Causative clause union in KiMeru. Report to NSF Project on Language Universals. University of Illinois, Department of Linguistics.

_____. 1978a. Morphology of HiBena. Paper presented to African Language Project, Department of Linguistics, University of Illinois, Urbana.

_____. 1978b. Causatives, transitivity and objecthood in KiMeru. Studies in African Linguistics. Supplement #7:113-26. Papers from the Eighth Annual Conference on African Linguistics.

_____. 1978c. Problems in the syntax of verbal extensions in Shona. Report to NSF Project on Language Universals, Department of Linguistics, University of Illinois, Urbana.

_____. 1978d. Accessibility and rule interaction: evidence from HiBena. Paper read at the Ninth Annual Conference on African Linguistics, Michigan State University, East Lansing.

_____, and Susan U. Stucky (st.) 1978. On the inadequacy of a grammatical-relation referring passive rule in Bantu. Paper presented at the Linguistic Society of America Summer Meeting, University of Illinois, Urbana.

JAKE, Janice L. (St.) 1977. Inversion and restructuring in KiMeru. Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana

_____. 1978. Object prefixes in KiMeru. Paper presented at the Ninth Annual Conference on African Linguistics, Michigan State University. East Lansing.

KENSTOWICZ, Michael (fa.) and Charles W. Kisseberth. 1977. Topics in phonological theory. (Includes extensive discussion of problems in Chimwi:ni phonology.) New York: Academic Press.

KIM, Chin-W. and Herbert F.W. Stahlke (fa.) 1971. Papers in African linguistics: Proceedings of the First Annual Conference on African Linguistics, Urbana, Illinois. Edmonton: Linguistic Research, Inc.

KISSEBERTH, Charles W., and Mohammad I. Abasheikh (st.) 1973. On the analysis of past tense formation in Chimwi:ni. University of Illinois, Department of Linguistics. Mimeographed.

_____. 1974a. Vowel length in Chimwi:ni--A case study of the role of grammar in phonology. In Papers from the Parasession on Natural Phonology, edited by A. Bruck, et al., 193-209. Chicago Linguistic Society.

_____. 1974b. A case of systematic avoidance of homonyms. Studies in the Linguistic Sciences 4.1: 107-24.

_____. 1975. The perfect stem in Chimwi:ni and global rules. Studies in African Linguistics 6:3.249-66.

_____. 1976. On the interaction of phonology and morphology: a Chimwi:ni example. Studies in African Linguistics 7:1.31-40.

_____. 1977a. The object relationship in Chimwi:ni, a Bantu language. Syntax and semantics, vol. 8: grammatical relations, edited by Peter Cole and Jerrold Sadock. New York: Academic Press.

_____. 1977b. Chimwi:ni morphophonemics. Stuides in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.C. Bokamba and C.W. Kisseberth.
_____, and C.C. Cheng. 1979. Ikorovere Makua tonology. Studies in the Linguistic Sciences 9:1.31-64.
_____, and C.C. Cheng. In preparation. Makua Phonology and Morphology.
_____, and Mohammad I. Abasheikh. In preparation. A grammar of Chimwi:ni.
ODDEN, David (st.) 1977. Problematic aspect of Shona tone. Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana.
_____. 1978a. The effect of consonants on tones in Shona. Report to African Languages Project. Ibid.
_____. 1978b. Tone assignment in Central Bantu languages. Report to African Languages Project. Ibid.
_____. 1978c. An accoustic study of tone in Shona. Paper read at the Linguistic Society of America Summer Meeting, University of Illinois, Urbana.
_____. 1979a. Stem tone assignment in Karanga Shona. Paper presented at the Tenth Annual Conference on African Linguistics. University of Illinois, Urbana.
_____. 1979b. Principles of stress assignment: a crosslinguistic view. Studies in the Linguistic Sciences 9:1.157-76.
_____, and Janice Jake. 1979. Cross clausal movements in Kipsigis. Paper presented at the Tenth Annual Conference on African Linguistics, University of Illinois, Urbana.
PRATT, Mary (st.) 1972. Tone in some Kikuyu verb forms. Studies in African Linguistics 3:3.325-78.
RUGEGE, Niyonzima Geoffrey. 1977. Floating tones in Shona. Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana.
_____. 1978. Multilingualism as a language policy in Uganda. Paper presented at the Symposium on Language Policies in African Education Linguistic Society of America, Linguistic Institute, University of Illinois, Urbana.
_____. 1979. Relative pronouns in Kinyarwanda. Paper read at the Tenth Annual Conference on African Linguistics, University of Illinois, Urbana.
SCHEVEN. Albert (staff). In press. Swahili proverbs. Washington D.C.: University Press of America.
SILVER, Pamela (st.) 1977a. An examination of the voicing alternation in Shona nouns and adjectives (classes 5 and 6). Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana.
_____. 1977b. An annotated bibliography on tone in Hausa. Ms.
_____. 1978a. Verbal morphology in Hausa. Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana.
_____. 1978b. Inside the 7-grade Hausa verbal system. Report to African Languages Project, Department of Linguistics, University of Illinois, Urbana
_____, and Scott R. Krause (st.). A reanalysis of the class 5 prefix in Shona. Studies in the Linguistic Sciences 8:1.181-96.
SKOUSEN, Royal (st.) 1972. Consonant alternation in Fula. Studies in African Linguistics 3.1:77-96.
STAHLKE, Hebert F.W. 1970. Serial verbs. Studies in African Linguistics 1:1.60-99.

_____. 1971. On the status of nasalized vowels in Kwa. In Kim and Stahlke (1971), 239-47.
_____. 1971. The noun prefix in Ewe. Papers from the Second Conference on African Linguistics. Studies in African Linguistics, Supplement 32, edited by Talmy Givón, 141-60.
_____. 1973a. The n/l alternation: a minor rule in Yoruba phonology. Issues in linguistics: Papers in honor of Henry and Renée Kahane edited by Kachru, et al, 854-62. Urbana: University of Illinois Press.
_____. 1973b. Surface restrictions on vowel sequences in Ewe. Studies in generative phonology, edited by C.W. Kisseberth, 114-43. Edmonton: Linguistic Research, Inc.
_____. 1973c. Ross' constraints and related problems in Yoruba. Studies in the Linguistic Sciences 3:1.193-230.
_____. 1974a. Review of Current trends in linguistics, vol. 7: Linguistics in Sub-Saharan Africa, edited by Thomas Sebeok. Language 50:1.
_____. 1974b. The development of the three way tonal contrast in Yoruba. Proceedings of the Third Annual Conference on African Linguistics. African Language Series. The Hague: Mouton.
STUCKY, Susan U. 1976. Locatives as objects in Tshiluba: a function of transitivity. Studies in the Linguistic Sciences 6,2: Papers on African Linguistics, edited by E.G. Bokamba and C.W. Kisseberth, 174-202.
_____. 1977a. Tshiluba locative phrases. Report to NSF Language Universals, University of Illinois, Department of Linguistics.
_____. 1977b. Preprefixes in Shona. Report to African Languages Project. Department of Linguistics, University of Illinois, Urbana.
_____. 1977c. A sad variety: making reference to future time in Loogoli. Report to African Languages Project. Ibid.
_____. 1977d. Ra., Ra., Ra.! for Ikinyarwanda. An example of the interaction of morphology with syntax. 1977, progress report.
_____. 1978a. Locative phrases and alternative concord in Tshiluba. Studies in African Linguistics, 9:1.107-19
_____. 1978b. A problem in Shona morphology. Paper read at the Ninth Conference on African Linguistics, Michigan State University, East Lansing.
_____. 1978c. How a noun class system may be lost: evidence from Kituba. Studies in the Linguistic Sciences, 8:1.216-33
_____. 1979a. Focus of contrast aspects in Makua: syntactic and semantic evidence. Ms.
_____. 1979b. The interaction of tone and focus in Makua. Paper presented at the Tenth Annual Conference on African Linguistics, University of Illinois, Urbana. To appear in the Journal of African Languages and Linguistics 1:2.
_____, and K.S. Hodges. 1978. On a non-grammatical relation referring passive rule in Bantu. Paper read at the Summer Meeting of the Linguistic Society of America, University of Illinois, Urbana.
THAYER, Linda J. (st.) 1974. A reconstructed history of the Chari languages: comparative Bongo-Bagirimi-Sara segmental phonology with evidence from Arabic Loan Words. University of Illinois doctoral dissertation. Ann Arbor: University Microfilm International.
WILBUR, Ronnie (st.) 1973. The identity constraint: an explanation of the irregular behavior of some exceptional reduplicated forms. Studies in the Linguistic Sciences 3:1.143-54. (Data from Akan.)

The following special issues are in preparation:

Studies in Arabic Linguistics
Editor: Michael J. Kenstowicz

Studies in Language Variation: Nonwestern Case Studies
Editor: Braj B. Kachru

Papers on Diachronic Syntax
Editor: Hans Henrich Hock

South Asian Linguistics: Syntax and Semantics
Editor: Yamuna Kachru

STUDIES IN THE LINGUISTIC SCIENCES

The following issues of SLS are out of print:
Spring 1971, Vol. 1, No. 1, *Papers in General Linguistics;* Fall 1971, Vol. 1, No. 2, *Papers on Hindi Syntax,* Editor: Yamuna Kachru; Spring 1972, Vol. 2, No. 1, *Papers on Syntax and Semantics,* Editor: Georgia M. Green; Fall 1972, Vol. 2, No. 2, *Studies in Baltic Linguistics,* Editors: Hans H. Hock and Michael J. Kenstowicz; Spring 1973, Vol. 3, No. 1, *Papers in General Linguistics;* Fall 1973, Vol. 3, No. 2, *Papers on South Asian Linguistics,* Editor: Braj B. Kachru; and Spring 1976, Vol. 6, No. 1, *Papers in General Linguistics,* Special section: *Topics in relational grammar,* Editor: Jerry L. Morgan.

The following issues are available:

Spring 1974	Vol. 4, No. 1, *Papers in General Linguistics*	$3.50
Fall 1974	Vol. 4, No. 2, *Papers on Phonetics and Phonology* Editors: Charles W. Kisseberth and Chin-W. Kim	$3.50
Spring 1975	Vol. 5, No. 1, *Papers in General Linguistics*	$3.50
Fall 1975	Vol. 5, No. 2, *Papers on Historical Linguistics: Theory and Metho* Editors: Ladislav Zgusta and Hans H. Hock	$3.50
Fall 1976	Vol. 6, No. 2, *Papers on African Linguistics* Editors: Eyamba G. Bokamba and Charles W. Kisseberth	$3.50
Spring 1977	Vol. 7, No. 1, *Papers in General Linguistics*	$3.50
Fall 1977	Vol. 7, No. 2, *Studies in East Asian Linguistics* Editors: Chin-chuan Cheng and Chin-W. Kim	$3.50
Spring 1978	Vol. 8, No. 1, *Papers in General Linguistics*	$5.00
Fall 1978	Vol. 8, No. 2, *Linguistics in the Seventies: Directions and Prospects* Editor: Braj B. Kachru	$10.00
Spring 1979	Vol. 9, No. 1, *Papers in General Linguistics*	$5.00
Fall 1979	Vol. 9, No. 2, *Relational Grammar and Semantics* Editor: Jerry L. Morgan	$5.00

Orders should be sent to:
SLS Subscriptions, Department of Linguistics
4088 Foreign Languages Building
University of Illinois
Urbana, Illinois 61801